

AD-A139 295

CULTURAL RESOURCES RECONNAISSANCE OF PASCAGOULA HARBOR
MISSISSIPPI(U) DSM ARCHAEOLOGICAL CONSULTANTS INC
MOUNDVILLE AL T S MISTOVICH ET AL 1983

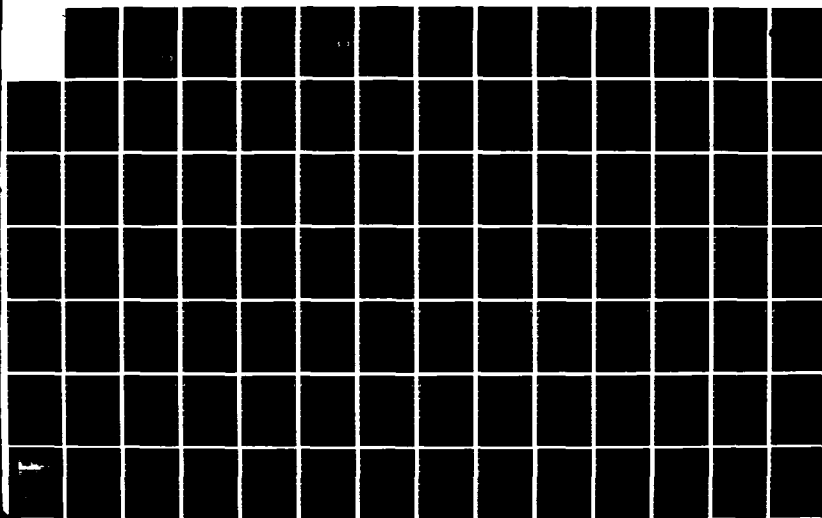
1/2

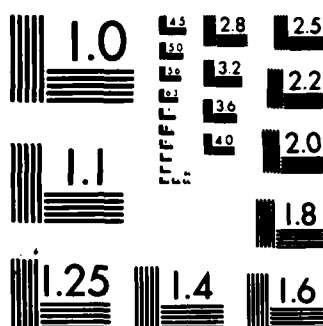
UNCLASSIFIED

OCE-SAM/PD-EC-83-001 DACW01-83-C-0036

F/G 5/6

NL





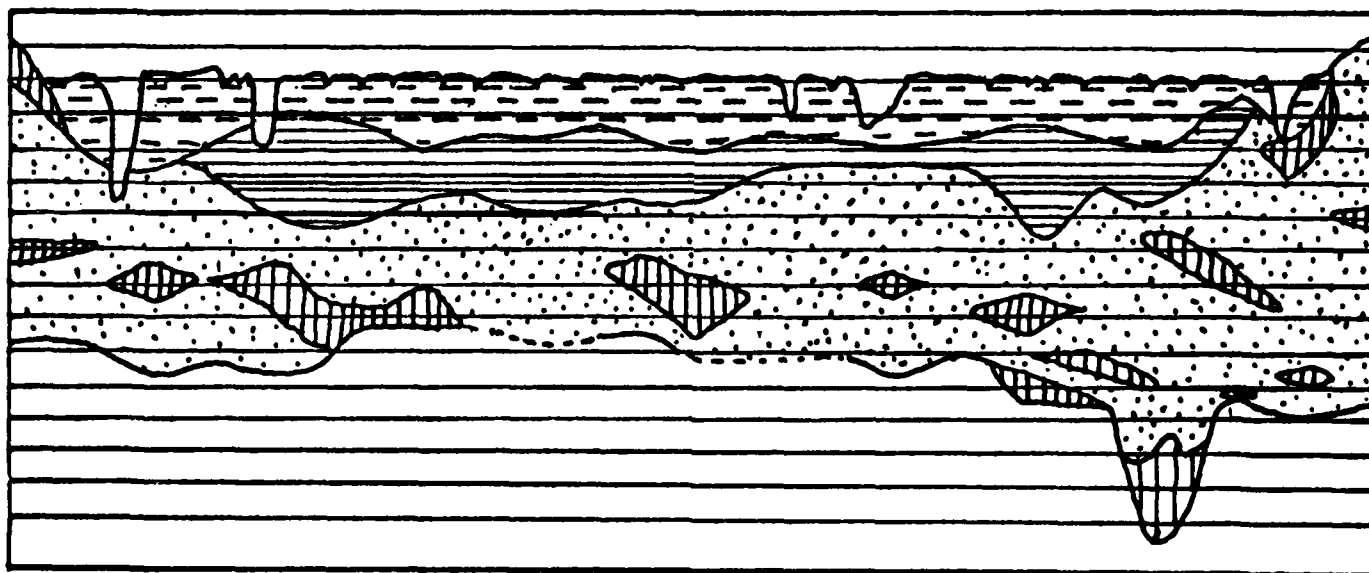
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

①

CULTURAL RESOURCES RECONNAISSANCE OF PASCAGOULA HARBOR, MISSISSIPPI

AD A139295

by
TIM S. MISTOVICH
VERNON JAMES KNIGHT, JR.
and
CARLOS SOLIS



DTIC FILE COPY

With Contributions By
GEORGE M. LAMB
and
EUGENE WILSON

DTIC
ELECTE
MAR 23 1984
S B

Prepared For
The U. S. Army Corps Of Engineers,
Mobile District

OSM Archaeological Consultants, Inc.
Moundville, Alabama
1983

DISTRIBUTION STATEMENT A

Approved for public release
Distribution Unlimited

84 03 22 019

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
1. REPORT NUMBER COE SAM/PD-EC-83-001	2. GOVT ACCESSION NO. AD-A239295	3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) Cultural Resources Reconnaissance of Pascagoula Harbor, Mississippi		5. TYPE OF REPORT & PERIOD COVERED Final 1983-1984	
		6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) Tim S. Mistovich Vernon James Knight, Jr. Carlos Solis		8. CONTRACT OR GRANT NUMBER(s) DACW01-83-C-0036	
9. PERFORMING ORGANIZATION NAME AND ADDRESS OSM Archeological Consultants Moundville, AL 35474		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS SAMPD-EC Mobile District U.S. Army Corps of Engineers Mobile, AL 36628		12. REPORT DATE 1983	
		13. NUMBER OF PAGES 157	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) unclassified	
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Unlimited <div style="border: 1px solid black; padding: 5px; display: inline-block;"> DISTRIBUTION STATEMENT A Approved for public release Distribution Unlimited </div>			
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) Unlimited <div style="border: 1px solid black; padding: 5px; display: inline-block;"> DISTRIBUTION STATEMENT A Approved for public release Distribution Unlimited </div>			
18. SUPPLEMENTARY NOTES			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Archeology, prehistory, history, shipwrecks, magnetometer survey, cultural resources, Mississippi Gulf Coast			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The results of an extensive documentary search, reconnaissance survey of upland disposal sites and remote sensing survey of channel and disposal areas in the Pascagoula, Mississippi locale are presented, as a preliminary phase of planned harbor improvement by the U.S. Army Corps of Engineers, Mobile District. A detailed account of the prehistory and history of the area, a description of 72 recorded shipwrecks, and a description of local shipbuilding traditions are included as a result of (contd on back)			

Block 20. Abstract - contd -

the documentary effort. The terrestrial survey involved the discovery and/or relocation of nine prehistoric and historic sites. Over five hundred anomalies were recorded in the marine survey portion of the investigations; attempts have been made to correlate these data with recorded shipwreck locations. A reconstruction of the geologic history of the area is presented, along with recommendations for further cultural resource investigations.

Cultural Resources Reconnaissance of
Pascagoula Harbor, Mississippi

Tim S. Mistovich
Vernon James Knight, Jr.
Carlos Solis

Contributions by
George M. Lamb
and
Eugene Wilson

DTIC
ELECTE
S MAR 23 1984 D
B

Submitted to the U.S. Army Corps of Engineers,
Mobile District, under the provisions of
Contract No. DACW01-83-C-0036

OSM Archaeological Consultants, Inc.
P.O. Box 401
Moundville, Alabama 35474

1983

TABLE OF CONTENTS

	Page
List of Figures	iv
List of Tables	v
List of Plates	vi
Abstract	vii
CHAPTER	
1. INTRODUCTION	1
Introduction	1
Environment of the Study Area	3
Acknowledgements	4
2. A SKETCH OF THE CULTURAL AND MARITIME HISTORY OF THE PASCAGOULA REGION	5
Prehistoric Chronology of the Pascagoula Region	5
The Era of Discovery and Exploration: 1513-1699	11
The Colonial Era: 1699-1810	14
Early American and Antebellum Statehood: 1810-1861	16
Civil War, Reconstruction, and the Development of Pascagoula: 1861-1930	17
A Chronological Synthesis of Landmarks in the History of the Pascagoula Region to 1940	22
3. HISTORY OF CAMP JEFFERSON DAVIS/CAMP TWIGGS, GREENWOOD ISLAND, MISSISSIPPI	25
4. PREVIOUS ARCHAEOLOGICAL RESEARCH IN THE PASCAGOULA REGION	41
National Register of Historic Places Properties for Jackson County, Mississippi	42
5. SUMMARY OF WATERCRAFT TYPES OF PASCAGOULA, MISSISSIPPI	43
6. DOCUMENTARY RECORD OF SUBMERGED CULTURAL RESOURCES	49
Introduction, Research Procedures, and Source Materials	49
Guide to Entries in the Shipwreck Inventory	52
7. TERRESTRIAL SURVEY RESULTS	73
Introduction	73
Survey Methods and Techniques	73
Site 22Ja516	81
Site 22Ja618	89
Site 22Ja537	91
Site 22Ja522	93
Site 22Ja523	94
Site 22Ja592	95
Site 22JaA-1	95
Site 22JaE-1	96
Site 22JaMM1	97
8. MARINE SURVEY RESULTS	99
Introduction	99
The Remote Sensing System	99
Survey Methods	101
Survey Results	104

9.	CORRELATIONS WITH SUBMERGED CULTURAL RESOURCES	125
	Correlation #1	125
	Correlation #2	127
	Correlation #3	128
	Correlation #4	128
	Correlation #5	129
	Correlation #6	129
10.	CHANGES IN THE SHORELINE AND THE GENERAL MORPHOLOGY OF THE PASCAGOULA AREA SINCE 15,000 YEARS BEFORE THE PRESENT	131
	Sea Level Changes	131
	Sedimentation Rates	133
	Drainage Changes	133
	Subsidence	136
	Active Erosion and Deposition	136
	Summary and Conclusions	138
	Implications for Submerged sites	138
11.	RECOMMENDATIONS FOR ADDITIONAL INVESTIGATIONS	141
	Introduction	141
	Recommendations for Terrestrial Sites	141
	Anomalies Recommended for Phase II Testing	142
	Summary	143
	Recommendations for Phase II Marine Investigations	143
	Projected Phase II Schedule	145
	Study Goals	147
	REFERENCES CITED	149

LIST OF FIGURES

Figure	Page
1. Study Area	2
2. Greenwood Island, Mississippi	31
3. Upland Disposal Sites	74
4. Channel and Disposal Site Index	100
5. Submerged Resource Correlations	126
6. Late Quaternary Sea Level Curves	132
7. Cross-section of Pascagoula River	134
8. Former Course of the Escatawpa River and Delta Complexes	135
9. Areas of Erosion and Deposition	137



Accession For	
NTIS	<input checked="" type="checkbox"/>
DTIC	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution	
Availability Codes	
(Availability and/or	
Dist	Special
A-1	

LIST OF TABLES

Table	Page
1. Aggregate Totals. Aboriginal Ceramics	12
2. Major Improvements of Pascagoula Harbor	20
3. Inventory of Documented Vessel Losses	54
4. List of Wrecked Vessels Excluded from Shipwreck Inventory . . .	70
5. Soil Types Present in Terrestrial Survey Areas	81
6. Anomalies Encountered	107
7. Category I Anomalies	119
8. Category II Anomalies	121
9. Magnetic Clusters	122
10. Schedule for Phase II Testing	146

LIST OF PLATES

Plate		Page
1.	Eastern Shore of Site 22Ja516	76
2.	Site 22Ja618, View to East	76
3.	Navigation Computer and Plotter	102
4.	Post-plot, Disposal Area A	102
5.	Interior View Onboard R/V GAMMA	103
6.	Shore Party, Shallow Water Disposal Site	103
7.	Category I Anomaly DSC-1-2	106
8.	Category II Anomaly C-1-1	106

ABSTRACT

The results of an extensive documentary search, reconnaissance survey of upland disposal sites and remote sensing survey of channel and disposal areas in the Pascagoula, Mississippi locale are presented, as a preliminary phase of planned harbor improvement by the U.S. Army Corps of Engineers, Mobile District. A detailed account of the prehistory and history of the area, a description of 72 recorded shipwrecks, and a description of local shipbuilding traditions are included as a result of the documentary effort. The terrestrial survey involved the discovery and/or relocation of nine prehistoric and historic sites. Over five hundred anomalies were recorded in the marine survey portion of the investigations; attempts have been made to correlate these data with recorded shipwreck locations. A reconstruction of the geologic history of the area is presented, along with recommendations for further cultural resource investigations.

CHAPTER 1

INTRODUCTION

The cultural resource reconnaissance of Pascagoula Harbor was conducted by OSM Archaeological Consultants, Inc. in the spring of 1983 in an effort to provide a baseline study of the prehistoric and historic human use and occupation of this southeast Mississippi locale (Figure 1). Performed for the U.S. Army Corps of Engineers, Mobile District, under the provisions of contract no. DACW01-83-C-0036, it is an unusual study, combining extensive documentary research with field survey in both terrestrial and marine settings. The research goals envisioned in the preliminary stage of the study were summarized as follows:

- 1) Conduct an extensive literature and archival search concerning human use and occupation of the Pascagoula Harbor region; to include data on known cultural resources both marine and terrestrial, and to consider the potential for as yet undiscovered resources.
- 2) Perform a reconnaissance level sample survey of proposed upland disposal sites, to include investigation of any previously recorded sites.
- 3) Perform a marine reconnaissance survey to ascertain the presence, nature, and distribution of both potential sites derived from archival research and of unknown sites within the area.
- 4) Present the data thus recovered in a report form which addresses both academic research and cultural resource management.

This report of investigations provides a thorough account of each phase of research conducted under the provisions of the contract. It is organized as follows. The introductory chapter gives a brief sketch of the project area environment. The second chapter consists of an overview of the prehistoric and historic cultural and maritime history of the study area. Appended to this is a chronological synopsis of regionally important historic and prehistoric events and processes. Chapter 3 presents a detailed history of Camp Jefferson Davis/ Camp Twiggs on Greenwood Island. This post-Mexican War post near East Pascagoula has important bearing on interpretations of the cultural resources remaining on Greenwood Island. Next comes a brief review of previous archaeological research in the Pascagoula region, both terrestrial and marine. Chapter 4 also contains a listing of National Register of Historic Places properties in Jackson County, Mississippi. Chapter 5 consists of a short study of the local boatbuilding industry on Mississippi Sound. Chapter 6 presents the results of documentary research pertaining to submerged cultural resources,

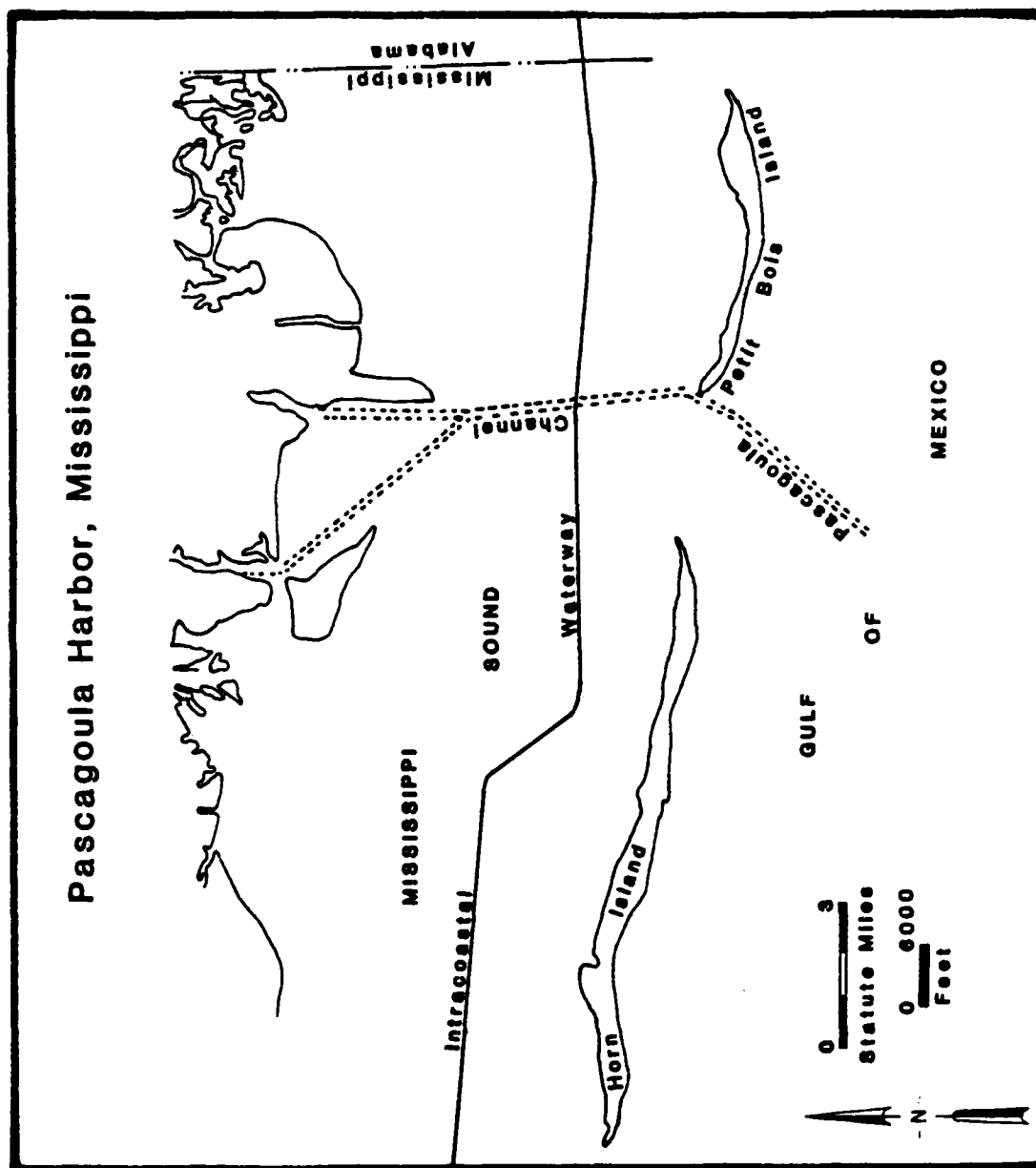


Figure 1. Study Area.

primarily shipwrecks. Chapters 7 and 8 present methods and results of the terrestrial survey and the marine survey respectively. Correlations between documented shipwrecks and discovered magnetic anomalies are the subject of Chapter 9. A geological reconstruction of the study area is included as Chapter 10, while the concluding chapter presents the recommendations of the authors regarding the cultural resources identified during the survey.

An Index volume has been prepared separately, including keys to the shipwreck map and to the anomaly maps, a UTM key to land site locations, and a listing of anomaly coordinates.

Environment of the Study Area

The area is located on the Coastal Plain of the Gulf of Mexico. Three broad divisions of landforms are present in the environs of the survey areas: long leaf pine hills, coastal pine meadows, and the alluvial plains of the Pascagoula and Escatawpa Rivers.

The alluvial plains merge with the coastal pine meadows. Both are relatively flat and locally swampy; these are the predominant environments present in the study area. Elevation in the coastal pine meadows range from 5 to 30 feet above mean sea level. Both the coastal meadows and alluvial plains are bordered by saltwater marshes. The largest local areas of saltwater marsh are those of the estuarine mouth of the Pascagoula River (Brown et al. 1944).

Climate

The precipitation and temperatures of this area are characteristic of the Gulf Coastal climatic type. Warm and humid temperatures predominate, and winter temperatures are occasionally in the subfreezing range. Rainfall is evenly distributed throughout the year, except for brief periods when excessive rainfall is experienced as a result of tropical storms (Brown et al. 1944:17-18).

Vegetation

Nearly all of the area has experienced deforestation during this century. Longleaf pine formerly predominated in the uplands. On the lower terraces longleaf pine was mixed with slash and shortleaf pine. Bottomlands were covered by a variety of deciduous hardwood trees such as several species of gum and oak. Also present were evergreens such as pine, liveoak, magnolia, holly, and cypress. Gum, cypress, magnolia, and maple are common in the swampy areas (Brown et al. 1944).


Soils

The parent material of the soils present within the study area consists of unconsolidated beds of fine textured to coarse textured Coastal Plain deposits. The soils are strongly acid to very strongly acid, as calcium carbonate is absent or has leached out. The soil groups present are Red-Yellow Podzolic, Low-Humic Gley, and Planosols. A description of

soils present in each proposed disposal area is presented in Chapter 6 (Soil Conservation Service 1964).

ACKNOWLEDGEMENTS

The efforts of a number of individuals were required to complete the research described in this volume. Much deserved acknowledgement and appreciation is extended to Dorothy Gibbens, U.S. Army Corps of Engineers; Jack and Kay Hudson of Cultural Resource Services, Inc., along with Mark Price, magnetometer technician, Tommy Taylor, boat captain, and Kent Morrison, technical aide; Colin Weeks of Wimpol, Inc., together with Tim Griffin, navigator and Keith Devenney, side scan operator; Milton Denny and Vince Van Luvender of Almon and Associates, along with Dale Taylor, instrument man; David Zornah and Joni Keyser, field personnel; Gloria Cole, Richard Walling, and Polly Futato, all of whom were involved in the preparation of this report.


Carey B. Oakley
Principal Investigator

CHAPTER 2

A SKETCH OF THE CULTURAL AND MARITIME HISTORY OF THE PASCAGOULA REGION

Prehistoric Chronology of the Pascagoula Region

Although the evidence is extremely meager in quantity, there is little doubt that the earliest human occupation of Mississippi Sound and surrounding areas dates to the Early Paleo-Indian period at ca. 11,000-12,000 B.P. As George M. Lamb explains in this volume, the geomorphology and climate of the northern Gulf Coast of Mexico were at that time quite different than at present. A significantly greater area of the near continental shelf was exposed and available for habitation, and it is presumed that there are drowned occupational sites offshore dating between this time and about 3,500-5,000 B.P., at which point the coastline may have become stabilized at approximately its present configuration (Curry 1965; Poag 1973). The evidence of Early Paleo-Indian occupation of this region is restricted to isolated finds of Clovis-like fluted projectile points. Only one such specimen has been documented from Jackson County (Greenwell n.d.:3), but the Lake Pontchartrain area to the west has produced at least one other site dating to this period (16Or34) (Coastal Environments 1977(III):Pl. 4, 5), and yet another Clovis-like specimen is reported for Marion County, Mississippi (Greenwell n.d.:3). Even if a number of sites of this age now lie submerged due to Early Holocene shoreline retrogression, the regional human population at this date must have been relatively minor if the frequency of presently reported sites is any guide. Lacking contextual data, it would be rash to speculate concerning Paleo-Indian use of the coastal range of environments.

Subsequent Archaic period cultural developments in the region are somewhat more abundantly documented, suggesting a gradual increase in human population. Dalton, Big Sandy I, stemmed and corner notched projectile points of the Early Archaic period appear sporadically along the Mississippi Coast (Greenwell n.d.:3, 7; Coastal Environments 1977(III):Pl. 4, 5). Greenwell in addition speaks of the interesting case of an apparently exclusive association of Big Sandy I-related points with a shell midden site on Deer Island (22Hc501), on the southern shore of Biloxi Bay (Greenwell n.d.:3).

His comments on excavations at the Powers Site (22Ja588), in the Pascagoula River Valley twenty miles inland from the coast, provide an intriguing glimpse of an (apparently) Early Archaic base camp, yielding preserved botanical remains, post holes indicative of temporary structures, and a diverse lithic inventory in which Stanley-like stemmed projectile points are characteristic (Greenwell n.d.:8-9).

Middle and Late Archaic site components are present in the region, but little is known concerning them. Marshall (1982:57) suggests that the

initial occupations of the Goode Lake sites on the Escatawpa River near Moss Point may be as early as Middle Archaic. Presumptive Middle to Late Archaic remains at these sites were characterized by numerous basin shaped "pit-hearths" of large diameter, sometimes containing masses of amorphous fired clay, and by suggestive evidence of temporary shelters (Marshall 1982:11-25, 51). Marshall also indicates the possibility of a cultural affinity with the Archiac Amite River phase (Gagliano 1963) further west, but fails to elaborate upon such a connection. We can be more confident, however, in predicting that at least the Late Archaic manifestation in the Pascagoula region will turn out to be closely related, if not identical to what has been called the Pearl River phase, because of the nearness of the study area to the type site (Cedarland Plantation: 22Hc35) near the mouth of the Pearl River in Hancock County, Mississippi (Gagliano and Webb 1970; cf. also Greenwell n.d.:8-9).

The Pascagoula region represents the eastern frontier of the subsequent Poverty Point culture, which develops directly from the local Late Archaic at about 1,800 B.C. or slightly earlier (Gagliano and Webb 1970: 69; Webb 1982:3). Poverty Point is characterized by an elaboration of artifact forms, with the introduction of shaped "cooking balls" of fired clay, by the development of lapidary industry, by increased coastwise and interior trade in exotic goods, and (at least in the lower Mississippi Valley), by more complex forms of social integration (Webb 1982; Gibson 1973). In the Pascagoula region, the few known Poverty Point sites are shell middens adjacent to coastal bays or bayous, indicating a greater economic reliance on estuarine resources than had been the case previously.

The three best documented Poverty Point components in the Pascagoula region are Apple Street (22Ja530), Greenwood Island (22Ja516), and the Bone Yard Site (22Ja537: also known as the Point Aux Chenes site). Webb (1982:71) has tabulated the Poverty Point complex traits for each of these three sites, and Greenwell (n.d.:8, 9-10, 11-12) provides further discussion of his excavations at Apple Street and Greenwood Island. Significantly, the main occupation at each of these sites is Bayou La Batre-Tche-functe rather than Poverty Point, with the Poverty Point components appearing in each case as a brief precursor to the emergent Gulf Formational cultural configurations.

Greenwood Island (22Ja516) and the Bone Yard Site (22Ja537) are both within the present study area and are further discussed and evaluated in this report. Fiber tempered ceramics recovered at both sites during these investigations may be associated with the Poverty Point components at each, as may be the steatite sherds encountered at 22Ja516 and 22Ja518. Neither these investigations, nor those conducted by the University of Alabama, Office of Archaeological Research (Solis and Walling 1982) at 22Ja516, recovered any evidence of stratigraphic integrity of the Poverty Point component at that site. Nevertheless, previous excavations conducted at 22Ja516 by the Gulf Coast Chapter of the Mississippi Archaeological Association, though unpublished, reportedly encountered the Poverty Point evidences stratigraphically below the Gulf Formational component in some part of the site (Mark Williams, personal communication).

The Gulf Formational stage in the Pascagoula region (ca. 800 B.C.-A.D. 1) is marked by the introduction of the Bayou La Batre and Tchefuncte ceramic series (Wimberly 1960; Ford and Quimby 1945). Wimberly's hybrid taxon "Bayou La Batre-Tchefuncte" applies well to the eastern segment of Mississippi Sound, as the two ceramic series appear in definite association at the same sites, and there is abundant evidence here of shared traits of ceramic decoration between the two. In fact, due to such continuities and overlaps in paste characteristics and decoration, Bayou La Batre types are often difficult to sort from Tchefuncte types in this region using published type descriptions (Marshall 1982:32-33). Along with these ceramics occur probably indigenous Alexander series pottery and lesser amounts of St. Johns-like pottery which may be traded from northern Florida. Biconical fired clay objects continue to be made. Sites of this period tend to be large, estuarine shell middens composed of Rangia and oyster, documenting a hunting and gathering subsistence regime with a clear seasonal emphasis on (communal?) fishing. Both the Greenwood Island site (22Ja516) and the Bone Yard site (22Ja537) in the present study areas bear evidence of extensive Gulf Formational components, at which Bayou La Batre ceramics slightly outnumber those identified as Tchefuncte series (contra Marshall 1982:63).

While Tchefuncte gradually developed into Early Marksville in the lower Mississippi Valley to the west of the study area, a similar transition was taking place to the east, from Bayou La Batre to Porter (Jenkins 1982). These Middle Woodland developments began at approximately 100 B.C. and were fully developed by about A.D. 1. Without question a comparable, contemporaneous shift from a Gulf Formational to a generally "Marksvillian" cultural pattern took place along Mississippi Sound in the Pascagoula Region. The main problem is taxonomic: what to call an assemblage geographically and typologically intermediate between Porter and Marksville on the Middle Woodland level (ca. 100 B.C.-A.D. 300). The answer must await the availability of future controlled collections from this period, but meanwhile Marshall's (1982:61) use of a generalized Marksville (I and II) terminology is adequate for the time being, especially since the few (and small) observed collections seem impressionistically impoverished in Santa Rosa series ceramics in favor of lower Mississippi Valley types. Greenwell's (n.d.:17) invocation of an "Issaquena-Santa Rosa" phase for the Pascagoula region is probably best ignored as a good candidate for a late Marksville period taxon, yet his brief discussion of ceramics from excavated village contexts at the Harvey (22Ha534) and Graveline (22Ja502) sites demonstrate assemblages of several good Issaquena or late Marksville ceramic horizon markers (n.d.:17-18). These components should be temporally equivalent to late Porter in the Mobile Bay region.

These nomenclatural considerations aside, it is possible to make some preliminary statements about other aspects of Middle Woodland culture in the Pascagoula region. Despite suggestions of small possibly accretional burial mounds in the preceding Bayou La Batre-Tchefuncte period (Greenwell n.d.:13, 15) there are as yet no well documented Marksville affiliated examples in the area. Estuarine Rangia midden sites continue the traditional littoral economic regime, but, according to Greenwell (n.d.: 16), sites of this period are also common along interior freshwater streams in ridge-ravine topographic settings (cf. also Marshall 1982). At least late in the period, apparently sizable non-estuarine "village" sites are known.

The two excavated examples discussed by Greenwell (22Ha534, 22Ja502) contained a wide range of domestic artifacts, burials, and post holes indicating circular and rectilinear structures (Greenville n.d.: 17-20). These non-estuarine habitation sites sound much like those known for the contemporaneous Porter phase to the northeast (Porter [1Ck21] and McVay [1Ck1] villages, Wimberly 1960:12-14, 28-30). In the present survey areas, Marksville ceramics have been recovered on Greenwood Island site 22Ja516, an estuarine shell midden.

Phillips' (1970:911) (and McIntire's, and Saucier's) difficulty in pinning down an archaeological phase of the general Baytown or Troyville period in the Lake Pontchartrain-eastern Mississippi Delta region is mirrored to the east along Mississippi Sound, where published contextual data for the period are nonexistent. This is compounded by the fact that the period is lacking in sufficiently exclusive artifactual horizon markers in the Pascagoula region. It should be temporally equivalent to terminal Porter or earliest Weeden Island in the nearby Mobile Bay region, but unfortunately neither Santa Rosa nor Early Weeden Island ceramic types appear to be sufficiently frequent to be of much assistance in identifying components from small collections.

This is not to question the possibility of eventually being able to segregate a local phase of Troyville (or Baytown) alignment. Both Marshall (1982:54) and Greenwell (n.d.:18) have made initial attempts at characterizing the appropriate ceramic repertoire, the former choosing to call it "Troyville-Weeden Island," and the latter, simply "Troyville phase." Marshall (1982:63-64) identified such a component at the Goode Lake sites on the Escatawpa River near Moss Point, and Greenwell identifies a "Troyville" component at the Harvey village site (22Ha534). No components of this period have been identified in the present survey.

The succeeding Coles Creek period (ca. A.D. 700-1000) is a bit less mysterious. Here again, though, we are confronted with the taxonomic difficulties of dealing with a region between and peripheral to two adjacent regions that are better known, along with the lack of excavated data and thus little basis for characterizing the local phase. No more than 20 km to the east of the present project area are three of the four sites on Mississippi Sound which Wimberly (1960:37-40, 53-56) elected to call "Weeden Island-Coles Creek," and which Walthall (1980:171-172) has more recently used as a basis for describing his Bates Hammock phase. The range of ceramic types characterizing this period in the Pascagoula region is no different, as far as can now be judged with small collections, from that at the Bates Hammock phase sites (Andrews Place Shell Midden, 1Mb1; Powell Mound, 1Mb9; Salt Marsh Mound, 1Mb10; and Bates Hammock Shell Midden, 1Mb11) excavated in 1940 and 1941 by the Alabama Museum of Natural History employing W.P.A. labor (Wimberly 1960).

The only ceramic difference currently perceptible between the Bates Hammock phase sites and the contemporaneous (Weeden Island-Coles Creek) expression in the Pascagoula region is the possibly somewhat greater role played in the latter by Coles Creek ceramic types. In both cases, however, the ceramic assemblages that are present represent a thorough amalgam of Gulf Tradition, South Appalachian Tradition, and Northern Tradition (in this case Miller-Baytown) attributes and types, suggesting far-flung

external contacts with neighboring cultures, and modes of ceramic tempering and manufacture characteristic of both the eastern and western segments of the Gulf Coastal Plain. Present are Middle to Late Weeden Island ceramics, a full repertoire of Early to Late Coles Creek ceramics (suggesting the future possibility of a subdivision), Mulberry Creek Cord Marked, Mobile Cord Marked (this obviously from the roughly contemporaneous Tensaw Lake Complex in the Mobile Delta region), Late Swift Creek Complicated Stamped, McLeod Check and Simple Stamped (these in addition to Wakulla Check Stamped, and in sufficiently low frequencies to have been imports) and (probably) Andrew's Place Stamped (a strictly local type).

Site types documented for this period include once more numerous estuarine shell middens, and Greenwell (n.d.:22) mentions in addition "riverine middens" in which he perceives a dietary shift towards a greater reliance on reptilian fauna (but provides no supporting data). Marshall (1982:64) identifies interior riverine components of this period at the Goode Lake sites on the Escatawpa River. Of some importance is the possibility that some or all of the conical sand mounds known in the Pascagoula region (see Moore 1905:296-297; Brown 1926:32-33) might be attributed to the Weeden Island-Coles Creek period. The presence of the abundantly documented Bates Hammock phase Powell Mound and Salt Marsh Mound a short distance to the east on Mississippi Sound at least suggests such an attribution. There is, in addition, at least one pre-Mississippian mound site in the region which might be justifiably called a small regional ceremonial center. This is the Graveline site (22Ja502), containing six or seven conical sand mounds (formerly at least 13, according to Greenwell) in addition to a truncated-pyramidal substructure mound. Moore's (1905:29) early excavations into seven of the mounds were reportedly without reward, but Greenwell has more recently worked at the site and has given a brief glimpse of his results. The pre-mound village midden in the vicinity of the substructure mound (Mound A), according to Greenwell (n.d.:20), dates to the (Early) Marksville and Late Marksville ("Issaquena") periods. The platform mound itself is entirely attributed to the "Issaquena-Weeden Island Ib or II period" (Greenwell n.d.:19)--a confused usage, to say the least, because the components of this label are by no means contemporaneous. But if we might be so incautious as to decipher the reference to "Weeden Island II" as meaning that the mound contained some amount of Wakulla Check Stamped pottery in addition to sand and grog tempered incised types, then the mound may well date to the Weeden Island-Coles Creek interval as discussed here. If so, the platform mound might be comparable to the Coles Creek period platform mounds of the Louisiana area. On the other hand, if the mounds really do date to a slightly earlier period (equivalent to "Weeden Island Ib"), the site type would not be out of line with the Middle Woodland Aspalaga-McKeithen type of mound group on the Eastern Gulf Coastal Plain.

Site components of the Weeden Island-Coles Creek period identified in the present survey include an apparently extensive component at 22Ja618 on Greenwood Island, with more modest occurrences at 22Ja516 (Greenwood Island) and 22Ja537 (Bone Yard site).

While no clearly distinguishable Early Mississippian (ca. A.D. 1000-1250) complex has yet been isolated in the Pascagoula region (as is also the case for the neighboring Mobile area), there are preliminary hints that

such a complex may exist. These hints are in the form of observed shell tempered ceramics from the region possessing attributes common to that period in the interior (such as large, noded, loop handles and modes of incising corresponding to early versions of the type Moundville Incised var. Moundville).

At any rate, it is quite certain that a fully developed Middle Mississippian complex is present and awaits definition. Until recently it has been customary to view the Mississippian presence along the Mississippi coast and in the eastern Mississippi River delta as a very late westward spread of Pensacola ceramic ideas from a Lower Tombigbee-Mobile source area (see Phillips 1970:954). However, with a recent refinement in our understanding of Mississippian ceramics in the Mobile region, which has allowed a fruitful subdivision of what has been called "Pensacola" (Fuller and Stowe 1982), it is now possible to see that there is nothing particularly "late" about these westward relationships. The Middle Mississippian manifestation in the Pascagoula region, insofar as it is now possible to tell from a few reports now in existence (Lazarus 1959a, 1959b, 1959d; Greenwell n.d., 1981; Dilworth 1979:145), appears closely aligned with the Bottle Creek Complex of ca. A.D. 1250-1500, sharing most, if not all, of the ceramic types characteristic of the latter. Greenwell (n.d.:24) feels that there is sufficient regional ceramic distinctiveness at this time level in the Mississippi Sound area to set up a local "Deer Island" series, but the criteria distinguishing this from typical Bottle Creek ceramics have not yet been published. Possibly Marshall (1982:64) is correct in thinking that grog tempered ceramics such as Baytown Plain accompany the local shell tempered series.

Estuarine shell middens were continuously occupied through this period. There are no data on interior riverine domestic sites other than for the minor Mississippian components at the Goode Lake sites (Marshall 1982:64). Interestingly, there appear to be at least two Mississippian sites in the Pascagoula region with platform mounds (Greenwell n.d.:23), the Rovisey site and the Michelle mound at the Front Street midden (22Ja 578), the latter on the Pascagoula River in urban Pascagoula. The Michelle mound has been partially excavated by Greenwell (1981:12-21), revealing post holes and multistaged construction. "Southern Cult" design elements appear on incised and engraved ceramics, and in addition to this a remarkable red painted human effigy pipe, representing an elaborately clad kneeling warrior, has been recovered from the Front Street midden site (Lazarus 1959a; Dilworth 1979). This pipe is closely related stylistically to one recovered from the Pocahontas Mound (Ford 1936:124), a Plaquemine period site near the upper Pearl River drainage.

Such evidence suggests a shift in social organization, if not in overall economic regime, towards an array of petty chiefdoms centering on the residences of chiefs. A comparable pattern appears to be characteristic of late Fort Walton (or Pensacola) remains in coastal northwest Florida (Brose and Percy 1978:102-103).

Middle Mississippian site components were identified within the present survey areas at Greenwood Island sites 22Ja516 and 22Ja618. Both are estuarine shell middens, the stronger component being at 22Ja618, which appears to have been formed largely during this period.

Marshall (1982:64) is undoubtedly correct in stating that a later Mississippian or Protohistoric complex is locally distinguishable from the earlier Mississippian complex just discussed, but it is far from clear what the discriminating criteria should be, what this later complex (or complexes) date to, and what is involved in the transition. Clearly there is a new infusion of Natchezean ceramic ideas from the lower Mississippi Valley, which occur in conjunction with the shell tempered series. For example, Marshall (1982:54, 64) identified Protohistoric components at the Goode Lake sites which yielded the ceramic type Fatherland Incised varieties Fatherland and Natchez along with shell tempered pottery. This fusion of very late Natchezean with late Pensacola (Bear Point Complex) and even Nodena ceramic styles on the Mississippi Coast is at present best illustrated by Williams' (n.d.) excavations at the "Ancient Earthwork Fortification" site (22Hc515) immediately to the west of the Pascagoula region in Hancock County, Mississippi.

Greenwell (n.d.:25) perceives evidence of "population stress" in those coastal shell middens which date to the late Mississippian period. Such middens, according to him,

"contain a large percentage of very small clams [in contrast to mature Rangia], and even small oysters and periwinkle snails. Drum, catfish, mullet, gar, and sheepshead are abundant, in all sizes, throughout the middens. Deer and other mammals are no longer common food sources, judging from the midden analysis. Alligator, shark, muskrat, and rodents are present, but usually in small numbers."

For the period of European-aboriginal contact, the only data currently available are from Williams work at 22Hc515. At that site a small component characterized by very late Natchezean pottery types was found associated with European trade goods dating roughly to the third quarter of the eighteenth century. Williams (n.d.:12) interprets this component as possibly a "refugee camp" for migrating Indians disrupted by French and Spanish presence on the Gulf Coast. Clearly much more work needs to be accomplished before it is possible to develop even a preliminary framework for the archaeology of the Protohistoric and Contact periods in this region.

In order to illustrate the range of aboriginal components present at the three prehistoric sites investigated during this project, Table 1 presents the aggregate totals of aboriginal ceramics and other component markers recovered from 22Ja537, 22Ja516, and 22Ja618, grouped by series or period.

The Era of Discovery and Exploration: 1513-1699

The opinion has often been expressed by writers of North American history, and by historical cartographers, that the northern coast of the Gulf of Mexico had been discovered and explored by Iberian navigators prior to the year 1519. The historical cartographers, notable among them Harris, have decided that such unrecorded explorations, as early as the

Table 1. Aggregate Totals. Aboriginal Ceramics and Other Component Markers From Sites 22Ja537, 22Ja516, and 22Ja618.

	22Ja537	22Ja516	22Ja618	TOTAL
POVERTY POINT				
Poverty Point Object	-	1	-	1
Steatite Sherd	-	2	1	3
BAYOU LA BATRE				
Bayou La Batre Plain	2	1	-	3
Bayou La Batre Stamped	1	30	-	31
Bayou La Batre Scallop Impressed	1	3	-	4
Santa Rosa Stamped	-	1	-	1
Unclassified Incised/Punctated	1	1	-	2
TCHEFUNCTE				
Tchefuncte Plain	-	8	-	8
Tchefuncte Incised	-	1	-	1
Tchefuncte Scallop Impressed	-	2	-	2
Lake Borgne Incised	-	1	-	1
Tammany Punctated	1	4	-	5
Mandeville Stamped	-	1	-	1
Unclassified Shell Stamped	-	1	-	1
OTHER GULF FORMATIONAL				
Residual Fiber Tempered Plain	1	6	-	7
St. Johns Plain	-	1	-	1
Alexander Incised	1	-	-	1
Alexander Pinched	1	-	-	1
Unclassified Zone Stamped	-	1	-	1
Crooks Stamped	1	-	-	1
MARKSVILLE				
Marksville Incised	-	2	-	2
Twin Lakes Punctated	-	1	-	1
Residual Bone Tempered Plain	-	1	-	1
WEEDEN ISLAND-COLES CREEK				
Pontchartrain Check Stamped	-	-	2	2
Mazique Incised	-	1	-	1
Mulberry Creek Cord Marked	-	-	1	1
Mobile Cord Marked	1	-	2	3
Wakulla Check Stamped	-	-	2	2
McLeod Check Stamped	1	-	-	1
McLeod Simple Stamped	1	-	-	1
MIDDLE MISSISSIPPIAN				
Pensacola Incised <u>var. Perdido Bay</u>	-	-	1	1
Pensacola Incised <u>var. Unspecified</u>	-	-	1	1
Residual Shell Tempered Incised	-	-	1	1
Residual Shell Tempered Plain	-	11	34	45
UNDIAGNOSTIC CERAMICS				
Residual Plain (Grit-Coarse Sand)	109	97	1	207
Residual Incised (Grit-Coarse Sand)	-	-	1	1
Residual Plain (Fine Sand)	11	60	17	88
Residual Plain (Grog-Clay)	41	154	9	204
Residual Incised (Grog-Clay)	-	2	-	2
TOTALS	174	394	73	641

year 1500, were the inspiration for several authentic contemporary maps of the period which seem to show, more or less faithfully, the Floridian peninsula and the westward arc of the Gulf of Mexico. The earliest such map is Juan de la Cosa's of 1500, with similar depictions being found on Waldseemuller's map of 1507, the "Admiral's Map" of 1513, Reisch's map of 1515, and Schoner's map of 1515 (among others) (Winsor 1886:106-128; Fite and Freeman 1926:25-27). This general coastal outline was, of course, eventually vindicated, but serious doubts remain as to whether such unrecorded voyages did in fact contribute to these maps. At least Waldseemuller's representation gives explicit credit to Vespucci, whose self-proclaimed voyage to the mainland in 1497 is now discredited, and other cartographers may have been influenced by faulty notions of the geography of Cuba, by an erroneous belief that the West Indies discoveries were near continental Asia, by pure guesswork, or by each other (Shea 1886:231; Fite and Freeman 1926:26). Indeed, the governor of Jamaica, in 1519, was still not acquainted with the fact that Florida was a peninsula and not an island, and apparently believed that Asia might be reached by water by sailing northwest from Cuba (Harrissee 1892:173).

In brief, no European visit to the Mississippi Gulf Coast prior to Pineda's voyage of 1519 can be proved. Clearly Ponce de Leon's explorations of 1513 did not take him that far west, as is probably also the case for Miruelo's trading expedition on the Gulf Coast in 1516 (Shea 1886:236). Pineda, however, was explicitly charged with "examining carefully the country, harbors, rivers, inhabitants, and all that which deserved to be noted" on the northern Gulf between the discoveries of Cortes to the west and Ponce de Leon to the east (Harrissee 1892). To Pineda then, in 1519, must go the credit of the first reasonably documented European exploration of Mississippi Sound, although there is no record of any contact with the native inhabitants at this time. Interestingly, though, beginning immediately with the "Cortes map" of ca. 1520 which probably depicts this exploration, those Spanish, English, and Dutch maps of the Gulf Coast which provide named points of reference give fairly consistently certain names which might be intended for the Pascagoula River mouth and its surroundings. At the mouth of the first river due west of Mobile Bay and River (Espiritu Santo), the Cortes map (Winsor 1886(II):404) has the name "Punto de Arrecifos" ("Point of Reefs"). Several subsequent maps show, in about the same place, "Cabo de Cruce", "Cabo Desierto", and "Cabo (or Rio) del Oro". Other sixteenth century place names which might apply to this vicinity, if not to the Pascagoula mouth specifically, are "Rio de Giles Goncalvez" and "Las Philipinas" (Beer 1904). Such names, while sometimes dismissed as the ideosyncratic inventions of mapmakers, deserve careful consideration as possibly indicative of actual explorations.

While Garay had high hopes for this newly discovered Gulf country, naming it "la Provincia de Amichel," the subsequent explorations of Narvaez, Soto, and Luna proved that it contained no treasure and no exploitable empires worth conquering. Narvaez's company certainly traversed coastal Mississippi in November of 1528, yet Cabeza de Vaca tells us nothing that we can confidently associate with the Pascagoula region. In short, for the remainder of the sixteenth and for most of the seventeenth century as well, we have no further documentary or cartographic information, due primarily to Spanish disinterest in the area. Despite the

Spanish move into northwest Florida in the early years of the seventeenth century to establish the Apalachee missions, the correspondence of the time reveals a surprising ignorance of the Gulf territory west of the Apalachicola River.

It took the reported presence of La Salle in the 1680s to jolt the Spaniards from their complacency in their absentee ownership of the northern Gulf Coast (Leonard 1939). It is from Spanish correspondence of this period that we gain some idea of late seventeenth century aboriginal conditions in the Pascagoula region. Two letters of Antonio Matheos, based in Apalachee country, which date to 1686, speak of the tribe and river of Estanani west of Mobile. The distance from Mobile is given as four day's journey, and another letter says that the distance was equivalent to that between Pensacola and Mobile (Lankford 1981:16). This strongly suggests that the "river of Estanani" was the Pascagoula River, and that its principal inhabitants in 1686 were the Estanani tribe.

Lankford has convincingly shown that these Estananis are the same group later known to history as the Biloxi, who spoke a Siouan dialect. Their name for themselves in Biloxi is "Taneks Aⁿyadi," thus it appears that Estanani was a name applied to them by another group. In an eastern Muskogean dialect, Estanani is probably to be understood as the compound form, "isti aⁿyani," meaning "the Aⁿyani people" (another name for the Biloxis recorded in the eighteenth century was "Anani"). But the last part of the compound, "aⁿyani," is purely Biloxi rather than Muskogean, probably meaning "men walking" (see Dorsey and Swanton 1912:178-179, 236; /aⁿya/, /ni/). The principal town of the Estanani (Biloxi) on the Pascagoula River was "Ducascaxi" (Serrano-y-Sanz 1912), an obvious Biloxi word whose meaning we will not attempt to decipher. This town was reportedly far inland, seven days distant from the Gulf.

Along with the Pensacola Indians, the Estananis were reportedly at war with the Choctaw in 1686. That same year they may have sent representatives along with a Mobilian embassy to meet and discuss terms of peace with Marcos Delgado at the Alabama River towns near present Montgomery. By 1693 the Estananis had apparently moved eastward to settle on the western shore of Mobile Bay (Lankford 1981:16-17). Their subsequent history as the Biloxi tribe, partially on the Pascagoula river in the eighteenth century, is better known and has been well summarized by Swanton (Dorsey and Swanton 1912:5-10; Swanton 1946:96-98).

The Colonial Era: 1699-1810

Iberville, commissioned to explore and colonize the lower Mississippi Valley and adjacent Gulf Coast for France, visited the Pascagoula River mouth in April of 1699. For a single day he had plans to establish the first French fort and settlement on the western bank of the delta, and sent workmen to that end, but soon recalled them after finding the river mouth and bay unsuitably shallow (Higginbotham 1967:1-2).

In a later exploration of the Pascagoula River that year, Iberville and Bienville met with and secured alliances with the two main Indian tribes located there at that time. These were the Pascagoulas and the

Biloxis, the latter having apparently returned to this place in the interim between 1686 and 1699. Their absence had been of sufficient duration that the popular indigenous name of the river had changed from Estanani to Pascagoula.

Although the Pascagoula Indians spoke a dialect of western Muskogean and the Biloxis were later found to speak a language perversely Siouan in affiliation, both shared a similar cultural pattern. They had a mixed economy with some reliance on horticulture, and a good description of their exploitation of oysters on Mississippi Sound has been left by Dumont de Montigny (Swanton 1946:377-378). Both groups, although small, maintained mortuary temples on the general Natchez-Taensa pattern. In the vicinity were two even smaller groups of Indians who apparently acted independently. Of these, the Mochtobi and the Capinans, very little is known (Swanton 1946:96-98, 103-104, 170-171).

After a period of settling in, a French seat of government was established in nearby Mobile in 1702. It remained there until 1720, when adverse circumstances caused the removal of the capital temporarily to Biloxi, and thence to New Orleans, at which it remained until the close of the French colonial period. In the early years of the century, three royal concessions were granted to colonists in the Pascagoula region. On the eastern side of the delta was the concession of La Pointe, and on the western side that of Graveline. An early immigrant to the La Point concession was the German Hugo Krebs, and a neighbor of Graveline was Francois Rillieux. A third concession was established by Chaumont on the upper Pascagoula River.

Chaumont's concession was soon dissolved, and for most of the French period the four other families named constituted virtually the sum of the European population of the Pascagoula region. Krebs became the predominant family in the later years of the century, and remained so as the colony passed to British rule after the Peace of Paris in 1763. The British granted further tracts of land to Dupont and Pacquette during the government of British West Florida (1763-1781), but in general failed to develop the Pascagoula area. As the region passed to Spanish jurisdiction after the Revolutionary War, the few Pascagoula colonists were permitted to keep their land holdings upon giving an oath of allegiance to Spain and the Catholic Church. Few other families arrived in the region during the period of Spanish colonial rule (Higginbotham 1967:4-11).

Having such a low European population throughout the Colonial era, there is little to say concerning the colonial economy or maritime history of the Pascagoula region. Certainly the cultivation of grains in addition to other vegetable products, including cotton and tobacco, were pursued by the colonists. The concessions of La Pointe and Graveline maintained quarters for the slaves who provided the main labor pool. The cultivation of cotton must have been especially important to the Krebs plantation, as we learn from Bernard Romans that Krebs had invented a highly efficient cotton gin by 1772, thus preceding Eli Whitney's patent by more than twenty years (Cain 1953:74-76). It soon became apparent, however, that most of the surrounding region was better suited to the raising of live-stock than to agriculture. Cattle herding became a prominent economic enterprise during the colonial period, and remained so through the first few decades of the nineteenth century.

Mississippi Sound became an important artery of coastwise shipping traffic soon after the arrival of the French, and so it remained during French, British, and Spanish rule. The transfer of passengers and supplies via this route was the chief mode of communication between colonial Mobile, Pensacola, Biloxi, and New Orleans. It was carried out largely in locally built, shallow draft sailing craft of various types (see Wilson 1983). Few vessel losses are documented for this period in the Pascagoula vicinity, but among them are a small fleet of berchas, a type of Spanish vessel, which were lost in transit from New Orleans to Mobile during a major hurricane of 1780 (Borja Medina 1980:428n).

Early American Era and Antebellum Statehood: 1810-1861

In 1810, the non-Spanish majority of the inhabitants of Spanish West Florida staged a rebellion, storming the government seat at Baton Rouge. A declaration of independence was drawn up, and a new and independent "Republic of West Florida" was created. Later the same year, when the President of the United States annexed that territory as part of the Louisiana Purchase, the officials of the new republic refused compliance. After a bout of somewhat piratical intimidation and looting by sympathizers against dissidents to the new Republic, West Florida was taken over by the United States in a show of force. The following year the territorial government of Orleans was extended to the Pascagoula region, and in 1812 it came under the jurisdiction of Mississippi Territory. By the end of the War of 1812, Jackson County, Mississippi Territory, had 110 heads of families and 214 slaves. In 1817 the boundary between Mississippi and Alabama territories was established, and Mississippi achieved statehood (Cain 1953:53-74).

By means of these political events, the Mississippi Gulf Coast became gradually "Americanized," and settled into a long and gradual period of antebellum growth. Immigrants arrived in small increments from the north and east, in great contrast to the fertile interior regions of the middle South, which received masses of new settlers at this time, intent upon agricultural pursuits. The pine barrens of southern Mississippi, however, were ill suited to a plantation economy, and as a consequence the local means of gaining a living prior to 1840 remained largely as it had been during the colonial era. The predominant livelihood came through open range cattle herding, supplemented by small-scale farming on land fertilized by livestock. Hunting was a secondary source of production (Hickman 1957:154; Cain 1953:127-128). The predominant pastoral economic regime for the Pascagoula region during this period, and the absence of a developed plantation system, is reflected in census data and records of slaveholdings. For example, in the year 1828, in which there were 200 tax paying families in Jackson County, the total number of slaves was only 202, all of which were owned by 50 families (Cain 1953:16).

At the same time in the interior agricultural belt, the cotton production system was rapidly transforming the general economy of the South, and such port cities as New Orleans and Mobile blossomed as export centers on the Gulf Coast. Pascagoula, in contrast, lacked a major navigable stream which extended a sufficient distance into the cotton belt. Consequently no commercial steamboat traffic ever really prospered in the

cotton trade on this river system, whose practical head of navigation for small-draught vessels extended only as far as the junction of the Leaf and Chickasawhay Rivers in Greene County (although under ideal conditions of high water, steamers could successfully reach the town of Enterprise farther up the Chickasawhay) (Cain 1962:41; Corps of Engineers 1879(I): 837).

Some early developers nevertheless regarded such a trade as feasible, and in 1818, the Mississippi Legislature appointed a commission to improve the navigability of these streams. Its treacherous snags were to be removed by employing a state snag boat, to be operated by revenues generated by means of a state lottery and by land sales (Cain 1953:73; 1962: 41). By 1842 the Chickasawhay and Pascagoula Rivers had been made relatively free of obstructions, and for a time a successful cotton trade was run between Enterprise and Pascagoula by John J. McRae, who is reported to have realized a substantial profit. But the completion of the Mobile and Ohio Railroad in 1855 from Mobile to Quitman and Enterprise put a quick end to the profitability of this traffic (Cain 1962:42), so that the river lay virtually idle until the timber boom later in the century. Indeed, the antebellum cotton trade had been thoroughly forgotten by 1908, at which date the city of Pascagoula celebrated the shipping of the "first" bale of cotton downriver to the port city (S-Wixon 1982:30).

By about mid-century Pascagoula, like several other sparsely populated areas of the northern Gulf Coast, had gained the reputation of having a healthful and pleasant climate "singularly exempt from acute and febrile disease," especially from the dreaded yellow fever which at times reached epidemic proportion in the more densely populated urban centers (Corps of Engineers 1874(I):755-756). Pascagoula consequently attracted numerous vacationers from Mobile, New Orleans, and northern cities, and McRae established a commodious resort hotel on the beach at East Pascagoula.

It was largely due to this healthful reputation that a temporary military camp and U.S. Army hospital were established on Greenwood Island in the closing months of the Mexican War. This reservation, first called Camp Jefferson Davis and subsequently Camp Twiggs, was maintained on the island between 1848 and 1852, at one point accomodating 2,192 soldiers. Because of the importance of this camp to the cultural resources inventory under the present survey (remains attributable to it have been identified at Sites 22Ja616 and 22Ja618 in Survey Area A), and because no accurate history of the reservation has yet been written, a separate chapter has been devoted to this topic. In 1852, a U.S. Army asylum for wounded and disabled veterans was separately established on an adjacent property, and operated until 1855.

Civil War, Reconstruction, and the Development of the Port of Pascagoula: 1861-1930

Pascagoula was not an important theater of military action during the Civil War. Most of the naval engagements and activities which took place in its vicinity (Daniels 1921(I)16;(I)19;(I)22) were inconsequential to the historical record of shipwrecks, with two exceptions. Mississippi

Sound had been effectively blockaded from the early part of the war (1862) to its conclusion, by Admiral Farragut's "West Coast Blockading Squadron." As a part of this strategy, between 1862 and 1863 six small captured fishing vessels were intentionally scuttled by Union forces in Petit Bois Pass in order to block the passage of Confederate blockade violators (see Shipwreck Compilation). This was a common procedure for blocking a channel used by both sides during the Civil War era. In a separate incident, the Confederate blockade runner FANNY was chased into Pascagoula Bay through Horn Island Pass in 1863. This sidewheel steamer was intentionally run aground at the Pascagoula beachfront, where the wreck apparently still remains (Higginbotham 1967:37-38; Cain 1962:68; see also Shipwreck Compilation, this volume).

Jackson County, having a rather laggard economic base to begin with, and having suffered during the war the combined effects of indiscriminant federal raiding in addition to a drastic loss of manpower (Cain 1962: 71-73), underwent the same Reconstruction era woes as were felt elsewhere in the Gulf country during the years from 1865 through 1877.

The south Mississippi lumber industry, which began with an emphasis on spar timber for export in the 1830s and 1840s, and which later was diversified with the large scale production of square timber and logs, was to transform Pascagoula into a major international exporting center by the 1880s. The great "lumber boom," as it was called, lasted from approximately 1870 through about 1930, as several hundred thousands of logs were rafted down the Chickasawhay, Leaf, and Pascagoula Rivers to sawmills and lumber distributors in the Moss Point and Pascagoula vicinity. The replacement of axes by crosscut saws in the interior pine barrens in the late 1880s trebled the productivity of this industry and lowered the costs of getting the products to the coast for export. By the turn of the century, numerous commercial "bull pens" and massive log booms dotted the lower Pascagoula river, the most prominent being operated by the Robinson, White, Denny, Dantzler, Gautier, Tam, Danner, McIntosh, and Farnsworth companies. Between about 1900 and 1910 the lumber industry thoroughly dominated the local economy and provided employment, directly or indirectly, for a majority of the local labor pool. In the early years, the lumber was carried on light draught sailing craft and small steamers, operated by the lumber companies or by lightering firms, out to Horn Island or Ship Island Harbor on Mississippi Sound, where it was transferred to larger vessels bound for domestic and foreign ports. Having reached its peak before 1910, the timber industry began to decline as the superior timber was logged out, complicated by the completion of competing rail lines from the interior to Mobile, and the industry was largely defunct a mere two decades later (Hickman 1957; Cain 1962:43-45; Corps of Engineers 1879(I):842-843; Moss Point-Pascagoula Chamber of Commerce 1920).

Adjunct wood product industries were contemporaneously developed, adding to the growing economic prosperity of the port cities of Moss Point and Pascagoula. The most important of these in the early years of this century were the production of naval stores, or turpentine "farming," and the commercial production of charcoal. Both industries had largely domestic markets, and both were consequently affected by the alternative of rail transportation which deflected much of the commerce from the port

city (Cain 1953:147-151). Nevertheless large quantities of these products were transported in barrels by means of small coastal sailing vessels (e.g. "charcoal schooners") by way of Pascagoula. In addition, a paper mill was established in Jackson County in 1914, and paper manufacture eventually rose to prominence as the second most important local industry in later years (Cain 1962:48).

Equally responsible for the late nineteenth and early twentieth century "boom" in wood products industries shipped from Pascagoula, and contributing to the persistent hopes of the local industries of that time that Pascagoula could surpass Mobile and New Orleans as the most important trade center on the northern Gulf Coast (a jealousy that nevertheless went unrealized) (Moss Point-Pascagoula Chamber of Commerce 1920), was the improvement of Horn Island Harbor, Pascagoula Harbor, and the lower Pascagoula River by the U.S. Army Corps of Engineers. This work of dredging and maintenance, initiated in earnest in 1880, was eventually to allow the passage of large seagoing vessels directly to Pascagoula and Moss Point, which made obsolete the necessity of lighterage over the bars at Horn Island Pass and at the mouth of the Pascagoula River.

As stated previously, the initial work of improving the navigability of the Pascagoula, Chickasawhay, and Leaf Rivers was carried out by the State of Mississippi during the period of early statehood (1818), in hopes of establishing a profitable packet service in the cotton trade. This project was only marginally successful. Between 1827 and 1832 the U.S. Congress made appropriations totaling \$20,000 toward the same end, but there is no record of how these funds were applied.

In 1869, during the Reconstruction years, a private charter was issued by the State of Mississippi to dredge an 8 ft by 60 ft channel through the Pascagoula River bar. This private channel, known as Noyes Canal, was completed the next year, and the grantees were authorized to charge a toll for the passage of vessels outbound through it. The U.S. Army Corps of Engineers was shortly afterward attracted to the prospect of improving the harbor, channel, and lower river, and after preliminary surveys in 1873 and 1878, recommended that the State of Mississippi charter be revoked in favor of a comprehensive and more commercially favorable federal involvement (Corps of Engineers 1874(I):754-761; 1879(I):105, 935-937).

The first federal appropriations for improving the riverine segment were made in 1878-1879, and the first for dredging the Pascagoula River bar was made in 1880. In 1894 appropriations were made for deepening the channel across Horn Island bar and for improving Horn Island Harbor on the northern side of the island. These appropriations began a long term unbroken series of dredging projects which, by 1907, could allow all but the deepest draught seagoing vessels to ascend directly as far as Moss Point, thus greatly stimulating seagoing trade to the port city (Corps of Engineers 1915(II):1843-1845). The following table presents a synopsis of major improvements to Pascagoula Harbor, exclusive of the early state riverine improvement project previously mentioned, from 1827 through 1958 (Table 2).

Fishing and oystering, another important industry in the Pascagoula

Table 2. Major Improvements of Pascagoula Harbor, 1827-1958.

Date	Activity	Channel Dimensions	Cost
1827	First federal appropriation for improving Pascagoula R. at mouth.	(no record of work done)	\$ 8,000.00
1827	Second federal appropriation, ditto	(no record of work done)	\$ 17,500.00
1832	Third federal appropriation, for purposes of survey.	(no record of work done)	\$ 5,000.00
1869	Private charter issued by State of Mississippi to dredge Pascagoula R. bar (Noye's Canal).	8' x 60'	\$ 27,000.00
1880- 1882	Federal appropriation for dredging Pascagoula R. bar.	8' x 190'	\$ 42,374.10 (est.)
1886- 1896	Channel from Moss Point to Mississippi Sound dredged.	12' x 180' (Moss Pt. to mouth); 12' x 80'-120' (mouth-sound)	\$ 87,317.60
1894- 1899	Horn Island bar channel dredged.	19.5' x 200'	\$ 7,682.40
1899- 1901	Horn Island bar channel expanded.	20' x 200'	\$ 88,000.00 (est.)
1899- 1902	Channel from above Moss Point to Mississippi Sound expanded.	12' x 150' (above L&N R.R.); 12' x 300' (below L&N R.R.)	\$ 304,346.36
1902- 1910	Channel from above Moss Point to Mississippi Sound deepened and extended.	17' x 150' (above L&N R.R.); 17' x 225' (below L&N R.R.)	\$ 302,097.25
1905- 1907	Horn Island channel deepened and widened.	21' x 300' (outer bar); 21' x 200' (elsewhere)	\$ 136,162.40 (new work) \$ 36,475.00 (maintenance)
1913- 1954	Horn Island and Pascagoula R. channels expanded.	35' x 325' (Horn Island Pass); 30' x 275' (Sound channel); 12' x 15' (Pas. R.)	\$ 258,040.00 (new work) \$1,007,479.48 (maintenance)
1949	Turning basin added by private interests.	---	Data unavailable
1954	Horn Island and Pascagoula R. channels, project modification.	25' x 300' (Horn Island Pass); 22' x 225' (Sound channel); 18' x 150' (Pas. R.)	Data unavailable
1958	Bayou Casotte channel dredge.	38' x 225'	Data unavailable

region, underwent considerable expansion during the last quarter of the nineteenth century, and rose to somewhat greater prominence with the demise of the timber boom in the 1930s. Commercial fishing was largely carried out in the Mississippi Sound area by means of small draught schooners and sloops operated either singularly or in small company fleets. Larger "snapperboats" ranged farther into Gulf waters. Mullet, redfish, croakers, catfish, and speckled trout, bound largely for northern markets via New Orleans, were not generally canned but rather were processed by salting and icing. Motor powered vessels gradually replaced sailing craft in this industry during the 1920s and 1930s. In addition, the earliest shrimp cannery on the northern Gulf Coast was established at Pascagoula in 1878 (Cain 1962:47-48). Of equal importance was oystering, which only became a profitable venture in Mississippi Sound after the closing of Bonnet Carre crevasse in Louisiana, which sealed off the Sound from the muddy fresh water of the Mississippi River. This decreased the frequent silting-in of oyster beds, and by the 1890s the average oyster size in Mississippi Sound had remarkably improved (Pascagoula Democrat Star 10-6-1893). With the enactment of laws governing the rights of oyster fishermen with respect to particular oyster beds in the late nineteenth century, rights which previously had been observed by custom, the industry was expanded and several packing plants were established in the Pascagoula vicinity.

As at Pensacola, Mobile, Biloxi, New Orleans, and other Gulf ports, a shipbuilding industry was developed at Pascagoula in tandem with the general increase in shipping and fishing at the port city in the last half of the nineteenth century. Although occasional vessels had been built according to necessity at Pascagoula as early as colonial times, the earliest clearly commercial shipyard in the vicinity was established by Ebenezer Clark in 1843, near Moss point. His business was largely confined to the repair of small schooners, barges and flatboats engaged in river traffic and in fishing with an occasional contract to build schooners and at least one steamer. The number of boat-yards in existence on the Pascagoula and Escatawpa Rivers steadily increased through the remainder of the nineteenth century. These small commercial boat-yards coexisted with individual boatbuilding enterprises on a much smaller scale, which typically turned out similar small sailing craft (Clark 1838-1856, Burger 1944).

The opening up of Pascagoula Harbor to commercial seagoing traffic by 1906 allowed shipyards of somewhat larger scale to begin to prosper. Such early shipyards as those operated by De Angelo and Fletchas consequently became engaged in the production of three-masted "blue water" schooners, with as many as one hundred employees, in addition to smaller craft. A repair yard for government vessels was established in 1910.

Even larger shipyards were established during World War I, as contracts became available for building "liberty ships" under the United States Emergency Fleet Corporation. These were largely responsible for the emergence of Moss Point, Mississippi as an important industrial center. While the end of the war represented an important setback to this industry, at least for the larger yards not primarily engaged in building fishing craft, the lapse was temporary. By 1937 the F.B. Walker and Sons Boatyard, formerly the Gulf Ship Company, began building commercial ves-

sels of steel construction. Shortly thereafter the company was purchased by the Ingalls Iron Works of Birmingham, Alabama, who became involved in the production of all-welded steel passenger-cargo liners. With the advent of World War II, the Ingalls yard made the rapid conversion to the production of vessels for the Allied cause, and the company has since prospered at the same location at the mouth of the Pascagoula River (Ziglar 1974).

A Chronological Synthesis of Landmarks in the History of the Pascagoula Region to 1940

Prehistoric Chronology

12,000-8,000 B.C.

Material evidence of Paleo-Indian period occupation in the Pascagoula region is extremely limited from this earliest period of human occupation. Habitation sites predating 3,500 to 5,000 B.P. are presumed to exist in now submerged areas of the continental shelf.

8,000-800 B.C.

A gradual increase in human population in the coastal region is indicated by a greater frequency of sites yielding Dalton, Big Sandy I, and Stanley related projectile points of the Early Archaic period. Subsequent Middle and Late Archaic sites suggest affinities to the Amite River and Pearl River phases to the west. The Poverty Point culture emerges at about 1,800 B.C., with a greater economic reliance on estuarine resources.

800 B.C. - A.D. 1

Large, estuarine oriented shell middens containing evidence of both the Bayou La Batre and Tchefuncte ceramic series appear in relative abundance during the Gulf Formational period. Evidence of cultural contact with the northern Florida area is present in the form of St. Johns-like pottery.

100 B.C. - A.D. 700

A shift from Gulf Formational to a general "Marksvillian" cultural pattern takes place in the Pascagoula region. An estuarine oriented economy continues, but evidence of increased inland occupation and exploitation is apparent late in the period. The succeeding cultural complex in the region, that of the Baytown or Troyville period, is poorly understood at this time.

A.D. 700-1,000

Weeden Island-Coles Creek sites in the region are comparable to the contemporaneous Tates Hammock phase to the east, with the exception of a stronger expression of Coles Creek ceramic types. Estuarine and riverine midden sites are abundant. Conical sand mounds in the Pascagoula area and a small ceremonial mound center to the east may date to this period and are suggestive of social change in the region.

A.D. 1000-1500

Shell tempered ceramics possessing attributes common to Early Mississippian sites in the interior appear in the Pascagoula region. Much more evidence is available for the succeeding Middle Mississippian, suggesting a fully developed complex aligned with the Bottle Creek complex of 1250-1500. While the ubiquitous littoral economy continues, the presence of platform mounds and elements of the Southern Cult suggest a shift towards a pattern of petty chiefdoms reminiscent of late Fort Walton remains in northwest Florida. Much of this complex appears to remain up to the time of European contact, with the exception of apparent infusions of Natchezean ceramic ideas.

Historic Chronology

1519-1680

The first reasonably documented European exploration of the Mississippi Sound is accomplished by Pineda. Subsequent explorations in the general region by Narvaez, Soto, and Luna revealed nothing of immediate economic interest to Spain, resulting in a general disinterest in the area until late in the seventeenth century.

1680-1699

The threat of French intrusion into the northern Gulf Coast spurs a renewal of Spanish interest in the region. Consequently, the first documentation of aboriginals along the Pascagoula River, the Estanani tribe, is recorded.

1699-1810

An abortive attempt is made by the Frenchman Iberville in 1699 to establish a fort at the Pascagoula River mouth. After establishment of a colony at Mobile in 1702, royal concessions are granted to colonists in the Pascagoula area. Four families, most prominently the Krebs family, constitute virtually the entire European population in the region until British control of the area emerges in 1763. The British rule proves brief, with jurisdiction passing to Spain until 1810. Economically, the eighteenth century is marked by a low density of cotton oriented plantations along the Pascagoula River, with increasing reliance on raising of livestock. Mississippi Sound increases in importance as an avenue for waterborne transportation of goods along the Gulf Coast.

1810-1861

Rebellion in Spanish West Florida results in creation of the Republic of West Florida in 1810. The Republic is short-lived in the face of forces of the United States. Pascagoula becomes a part of the state of Mississippi in 1817. The economic livelihood of the region is still based on cattle, despite efforts to gain access to interior agricultural markets through the improvement of the Chickasawhay and Pascagoula Rivers. Camp Jefferson Davis is established on Greenwood Island in 1848.

1861-1940

Pascagoula is effectively blockaded by Union vessels at the onset of the Civil War, remaining a minor theater of action throughout the hostilities. The economically trying times of the Reconstruction era end abruptly in the 1870s when the lumber boom begins throughout the South. Pascagoula becomes a major international exporter of wood products. U.S. Army Corps of Engineers improvements to the harbor beginning in 1880 eventually allow sea-going vessels access to Pascagoula. At the same time, commercial fishing gains economic prominence by the end of the century. Local shipbuilding reaches its peak with the establishment of Ingalls Shipyard immediately prior to World War II.

CHAPTER 3

HISTORY OF CAMP JEFFERSON DAVIS/CAMP TWIGGS, GREENWOOD ISLAND, MISSISSIPPI

On the first of February, 1979, two citizens of the community of Pascagoula had the occasion to visit the "Big Greenwood Island site" (22Ja516), a local shell midden site known equally well to aboriginal artifact collectors and antique bottle collectors in the vicinity. The tide being exceptionally low at that time, these two visitors were allowed the opportunity of inspecting the broad mud flat to the east of normal shoreline. This mud flat is usually underwater at present, but was once a part of the terrestrial site and was covered by the shell midden. The portion of the midden overlying the mud flat adjacent to the normal present shoreline was washed away during the 1960s by erosion resulting from channel construction and use of Bayou Casotte, which forms the eastern boundary of the site.

Our two visitors on this occasion were surprised to find what seemed to be a wooden coffin eroding from the mud flat. This they promptly reported to the local newspaper. A conscientious local amateur archaeologist, Mr. Carey Geiger, was then contacted, who in turn reported the find to Samuel O. McGahey of the Mississippi Department of Archives and History. At the first opportunity, McGahey, in the company of MDAH archaeologists John Howell and William Wright, arrived on the scene to supervise the removal of this coffin and its contents, and a second one which had been found adjacent to the first soon after its discovery.

Two simple coffins were thus removed. The skeletal remains were assigned for analysis to Dr. Alton K. Fisher, whose report (1979) concluded that they represented two young adult males, probably Caucasian. Buttons from both burials were examined by William C. Wright (1979), who found them to be of types popular during the second quarter of the nineteenth century.

In an effort to establish a documentary context for these two burials, Mr. Geiger examined two published local histories which, though the references were rather vague, led him to conclude that the interments were probably assignable to Camp Jefferson Davis, a military post and hospital established somewhere in the vicinity at the close of the Mexican War (Geiger 1979).

Subsequent archaeological investigations at Sites 22Ja516 and 22Ja618 (Solis and Walling 1982) confirmed that there was a definite early to mid-nineteenth century occupation at these sites, and a large archaeological feature containing a nineteenth century French wine bottle was discovered and partially excavated during that testing program (1982:22-25). This offered some substantiation to verbal reports that "hundreds" of whole nineteenth century bottles had been removed from 22Ja516 in years

past. But the historical context was even then still in doubt. Was Camp Jefferson Davis definitely on Greenwood Island, or elsewhere, in East Pascagoula? If on Greenwood Island, where on the island? Had its history been written? What was its relationship to the supposed U.S. military hospital said to have been here or in the vicinity prior to the Civil War? Was the latter being confused with the U.S. Army Asylum, or "Old Soldiers Home," established after the Mexican War in East Pascagoula? None of these issues could be definitely resolved with the few secondary documentary sources then at hand.

Again, under terms of the present investigation, Site 22Ja5i6 has been revisited and this document reports further evidence of a nineteenth century occupation, which can now be seen to represent an intensive, and to some degree intact, component at the site and perhaps also at adjacent 22Ja6i8.

Standard, authoritative histories of the State of Mississippi (Rowland 1907, McLemore 1973, Lowry and McCardle 1978) make no mention of a "Camp Jefferson Davis." Nor does a published article particularly devoted to Mississippi's participation in the Mexican War (Brent 1969). Rowland's Military History of Mississippi, 1803-1893 (1978) is silent on the matter. However, a typescript WPA project (1936-1938:201-202) on the history of Jackson County, Mississippi, has some information on the military post though largely devoid of references. The information contained in a local history by Cain (1962:53-54) is virtually identical to that found in the WPA report, and Higginbotham's (1967:29-30) more recent history of Pascagoula contains little more. All in all, what could be found published on Camp Jefferson Davis was decidedly meager, lacking in reference material, and too vague to be of much use. Some of the information found in the WPA and Cain histories, e.g. that Greenwood Island was purchased by "President Fillmore" and that the camp included a "marine hospital," are now seen to be incorrect. This published material, in any case, could not even tell us precisely when such an outpost was in existence, nor where, exactly, it was.

The circumstances of this project thus created the conditions in which it became appropriate to assemble a brief history of this military outpost for the first time. This required a bit of detective work with government documents on deposit at the National Archives, as well as with materials in the Library of Congress and several regional southeastern libraries. There is much, of course, that could yet be written on this subject, but the following account should be sufficient to help establish the significance of the camp and hospital and of their archaeological evidences.

The opening scene in this history is Washington D.C., in the summer of 1847. Most of the swollen ranks of the United States Army and the Navy's Marine Corps were encamped in Mexico, waiting out the final months of a war precipitated by the U.S. annexation of the independent "Republic of Texas." The main battles of the war had already taken place: Monterey had been besieged in September of 1846, and Buena Vista had been defended by General Taylor the following February. Since that time the war was becoming more noticeably adventuristic and less plainly defensible as a purely military necessity.

Jefferson Davis of Mississippi, at the outbreak of the war, had resigned his seat in the U.S. House of Representatives to be elected Colonel of the 1st Mississippi Rifles. With this command he had gained much esteem in the field of battle, playing a prominent role at Monterey and being wounded at Buena Vista. Now, in July of 1847, he was mustered out of the Army, and almost immediately accepted a vacancy in the U.S. Senate (Rowland 1923:xv). Davis, with his firsthand experience with the Army in Mexico, was to assume much of the responsibility for making official preparation for the special problems presented by the Army's return in coming months.

Stateside, New Orleans had become the main military port of embarkation and disembarkation for supplying and reinforcing the troops in Mexico, and for receiving their wounded. There were other military posts at Mobile and Pensacola, and these posts also saw a share of this activity. As the war was plainly drawing to a close, the possible inadequacy of the government facilities in these places for receiving the entire army, when the time came, was an issue of increasing concern. Government officials came to realize that an additional military outpost would be probably required on the northern Gulf Coast, and that hospital facilities for the returning sick and wounded would have to be somehow expanded.

William L. Marcy, the Surgeon General of the Army, had foreseen this problem at the height of the fighting in 1846. Lacking accurate casualty statistics from the field of battle, but receiving staggering requisitions from field medical officers, Marcy personally went to New Orleans in September of 1846 to inspect the conditions there. He found them appallingly inadequate: the small hospital at New Orleans Barracks could not hope to administer to scores of wounded and disabled then arriving regularly from Veracruz. Marcy promptly sequestered the entire New Orleans Barracks compound for use as a hospital, in addition to improving the capabilities of the small hospital already there. Later he did the same thing with the army barracks at Baton Rouge (Report of the Surgeon General, Nov. 23, 1847; Ex. Doc. 1(21):721; 30th Cong., 1st Sess.).

Acting upon the need for a new military reservation on the northern Gulf of Mexico, President Polk in August of 1847 recommended that the U.S. Engineers Department make a survey of lands in the Mississippi Sound area that might be suitable for a new post. This survey was performed, and maps were submitted (NARS RG 77: Dr. 138, Sh. 8,51) showing various promising tracts in the Pascagoula area, including either end of Horn Island. None of these recommended tracts, however (which did not include Greenwood Island) were eventually used for this purpose.

On December 10, 1847, Jefferson Davis took his seat in the U.S. Senate. Recognizing his experience in military affairs, Davis was immediately appointed as chairman of the Military Committee of the Senate. Only five days later, Senator Davis graphically pointed out to the Senate the urgency of the situation in New Orleans, still totally inadequate to provide shelter, medical assistance, and relief from destitution of returning veterans. At Davis' urging, the Senate that day passed a resolution to the following effect:

Resolved: That the Committee on Military Affairs be instructed to inquire whether the interest of the service does not require that a hospital or other additional means be provided at New Orleans, for the better accomodation of wounded, invalid, and other soldiers and volunteers going to or returning from Mexico. And also, to inquire whether any further provision of law be necessary to provide adequate means in all cases for the support and assistance of discharged soldiers and volunteers on their return home . . . (Congressional Globe 12-15-1847:26-27).

Senator Jefferson Davis, at the head of the committee so charged, soon began a draft of a bill to accomplish these purposes. This bill was to receive its appropriation from a more general previous enactment of March 2, 1847, for the support of the army in the year ending June, 1948 (U.S. Statutes at Large, Twenty-Ninth Cong., Sess. II, Ch. 35, 1847). Davis' more specific bill, authorizing an appropriation of \$100,000 for the erection of a new hospital "at or near" New Orleans Barracks, was read before the Senate and passed January 25, 1848 (Senate Journal 1-25-1848). On the tenth of February the bill passed the House of Representatives unaltered, and it was signed into law by President Polk on the twenty-second of the month (Senate Journal 2-10-1848; 2-22-1848). This law, which was to be the authorization for purchasing Greenwood Island and building Camp Jefferson Davis later that year, is here reproduced in full.

CHAP. XII. - An act to provide additional Quarters near to New Orleans, for United States Soldiers and Volunteers, returned from or going to the Seat of War in Mexico.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that, from the appropriation of five hundred thousand dollars "for providing for the comfort of discharged soldiers who may be landed at New Orleans, or other places within the United States, so disabled by disease, or by wounds received in the service, as to be unable to proceed to their homes, and for forwarding destitute soldiers to their homes," contained in an act making appropriations for the support of the army and of volunteers for the year ending thirtieth June, eighteen hundred and forty-eight, and for other purposes, approved second March, eighteen hundred and forty-seven; the Secretary of War be, and he is hereby, authorized to apply a sum not exceeding one hundred thousand dollars, to the erection, at or near the United States barracks, below New Orleans, of a wooden hospital, commensurate with the probable wants of the service; also of temporary quarters for the accomodation of United States troops and volunteers during their proper dentention at that post, when going to or returning from Mexico; and for the purchase of additional ground, if any shall be necessary to execute advantageously the objects herein specified (U.S. Statutes at Large, Thirtieth Cong., Sess. I, Ch. 13, 1848).

The bill and its appropriation were timely enough. A massive Army and Marine withdrawal from Veracruz could be forseen in the near future, and new accomodations for them would soon have to be set in train. There

were two kinds of enlistments during the war: some were "for the duration," while others were "five year" men. Now those "for the duration," upon their return, would be required to report to some station where they could be mustered out in due time and in proper fashion. "Five year" men likewise would have to be assigned to some post for the remainder of their term of service. The summer of 1848 was to be a busy one. Between May 30 and August 31 of that year, some 10,286 troops disembarked at Veracruz upon hired steamers and sailing vessels, bound for ports on the northern Gulf of Mexico. The total U.S. force in Mexico at the end of the war, by one count, totaled 22,695 soldiers (Report of the Adjutant General of the Army, Nov. 30, 1848; Ex. Doc. 1160; 30th Cong., 2nd Sess.).

On June 8, 1848, the Adjutant General of the Army issued General Order #25, which directed the dispersal of the Army upon arriving in the United States. In general, the assignments of volunteer regiments were to be "as near to their homes as circumstances and the convenience of the service" would permit. Specifically, part of this order directed the construction of a new camp on Mississippi Sound.

The 1st, 2d, 3d, 4th, and 5th regiments of infantry will be concentrated at, or in the vicinity of, Pass Christian, under the orders of Brevet Major General Twiggs, who will designate the ground for the encampment" (Report of the Adjutant General of the Army, Nov. 30, 1848; Ex. Doc. 1:170; 30th Cong. 2nd Sess.).

The statute sponsoring this new establishment, authorized by Jefferson Davis, clearly had New Orleans in mind rather than Mississippi Sound, but the Adjutant General saw fit to construe the phrase "near [New Orleans] Barracks" in a rather broad sense. This was evidently for a very practical reason. The season for yellow fever was about to ensue; consequently an urban setting was to be avoided in favor of the more healthful and less congested environment of coastal Mississippi (the fact that yellow fever is transmitted by mosquitos was not suspected at that time). Moreover, Mississippi Sound, being located halfway between the two principal port cities on the northern Gulf, was thus beneficially situated for discharging troops whose homes were in various sections of the Southeast.

S.B. Dusenbery was soon afterwards dispatched to the Mississippi coast to select and purchase an appropriate reservation large enough to accomodate at least five regiments (amounting to a division). Passing over Pass Christian, he made his way to East Pascagoula, where he entered into negotiations with Col. Jacob Baptiste for the purchase of an uninhabited and unimproved tract known as "Greenwood Island." A rather inaccurate plat was obtained, based upon a Land Office survey of 1841, and a purchase agreement was worked out prior to June 14, for the sum of \$5,000. Dusenbery immediately began construction of buildings upon the island, giving the new reservation a name: "Camp Lawson."

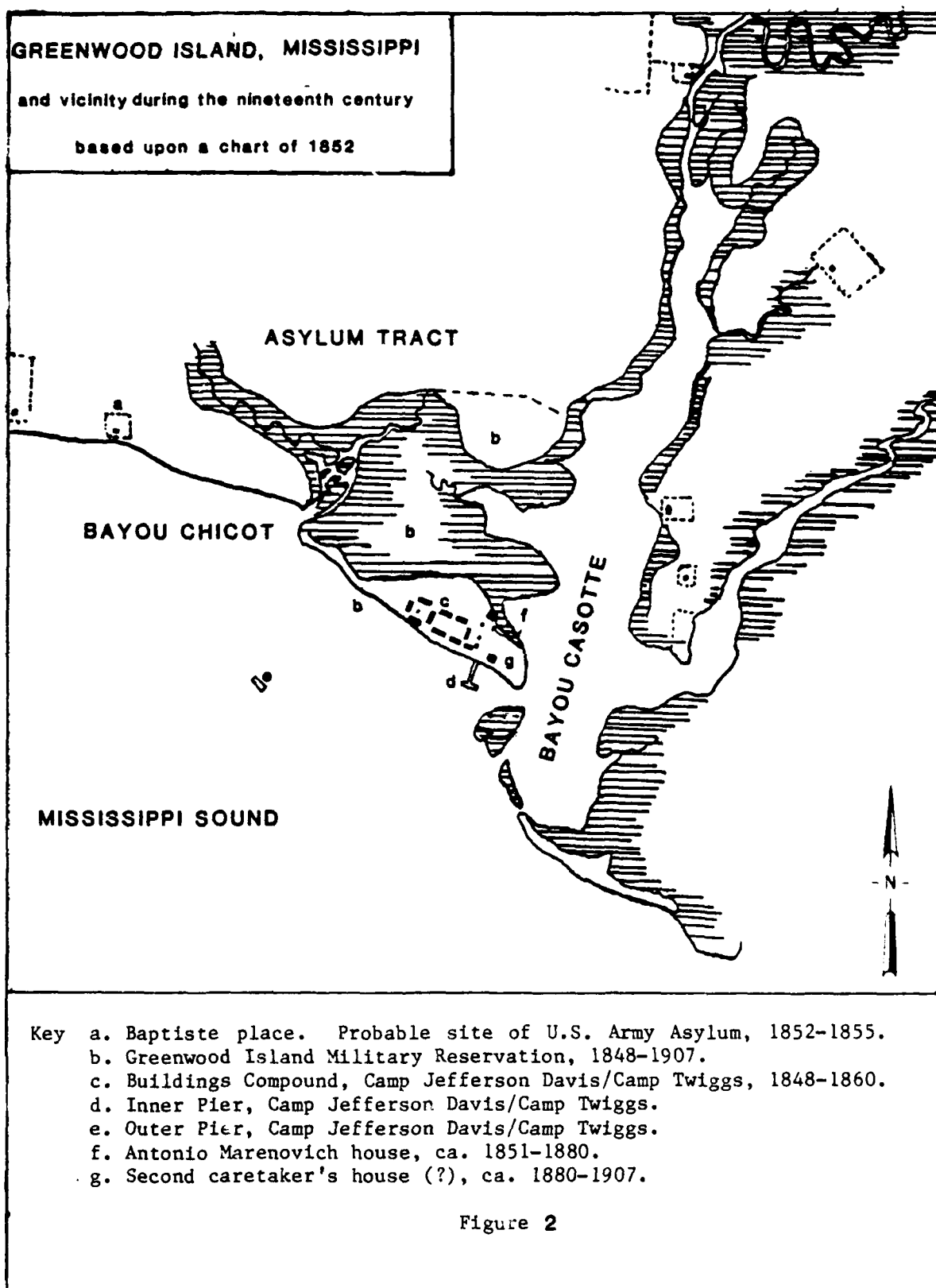
One must wonder how carefully Dusenbery inspected this property, if at all, prior to agreeing to purchase it on behalf of the Government. Greenwood Island was not really an island, but a salt marsh, of about 145 acres. It was bordered on two sides by bayous, and on a third by Mississippi Sound. Only about a third of this was dry and elevated enough to be habitable, consisting of low rises on the southern margin of the property,

covered in pine, cedar, and liveoak. Just before passing to Baptiste, the "island" had belonged to Francisco Krebs, and before that it had been part of a land grant to Augustine Krebs. The grant was confirmed by the U.S. Land Office in 1847, only a year before being sold to the U.S. Army. The only improvement on the entire land grant was a small cleared field on the western shore of Bayou Chico, opposite Greenwood Island (Jackson County, Mississippi, Deed Book 9; Deed Book 31:588-589; Township Plat Book 1).

By June 14, General Twiggs and five regiments had arrived on the new reservation and were encamped, undoubtedly as a "tent city," as they had also frequently encamped in Mexico. A muster roll was assembled by the general staff. Present were four companies of the Second Dragoons, seven companies of the 1st Infantry Regiment, nine companies of the 3rd Infantry Regiment, seven companies of the 4th Infantry Regiment, and eight companies of the 5th Infantry Regiment. Including the general staff, there were 2,192 troops on hand. Supervising the hospital under construction was Surgeon J.B. Porter (NARS Microcopy M-617, #1516).

This, it hardly needs mentioning, must have been rather crowded. As the troops arrived, and the buildings were completed, the reservation assumed a formal arrangement. At the southern margin of the island, on the largest hummock, were the "permanent" buildings. There were, apparently, ten large buildings and an unknown number of smaller outbuildings (Fig. 2). The large buildings were formally arranged around two compounds, one rectangular, and the other square. Each large building was of frame construction measuring 50 by 100 feet in plan. These were raised one and one-half feet above ground by means of wooden piers. Construction materials consisted mainly of unseasoned pine. Of these buildings, one was a kitchen, some portion of the rest was devoted to the hospital, and the remainder presumably was allocated to the regular officers. Cisterns were brought in to serve the camp. A cemetery was established, probably near the southeast shore, as indicated by the archaeological remains discussed earlier. A pier was built to the south extending a short distance into Mississippi Sound. Because the average depth here was only three feet, a second pier, in reality an isolated platform, was set farther out in deeper water. The latter could be reached by steamers, and the reservation thus could be supplied by water, using lighter vessels to ferry goods and passengers between the inner and outer piers. A bridge was built over Bayou Chico, allowing access by road to East Pascagoula, and also to the nearby McRae Hotel, where the officers regularly dined and enjoyed the more hospitable beachfront there (NARS RG 92, "Greenwood Island"; RG 77 (Map), Dr. 138, Sh. 9; Cain 1962:54).

Within the first month of its existence the name of the reservation was changed to Camp Jefferson Davis, in honor of its chief sponsor in the Senate. Little is known concerning camp life during this first summer. The desertion rate seems high: 59 deserters between June 14 and July 25, 1848, and 48 more in the next two months (NARS Microcopy M-617, #1516). But this was perhaps to be expected: President Polk had declared an end to hostilities on July 4th, and just two days later a general amnesty for deserters was ordered by the Adjutant General by direction of the President (Ex. Doc. 1(21); 30th Cong., 1st Sess.). There was thus no legal sanction to keep potential deserters from simply packing up and going home.



At the end of July, 1848, a second military return was prepared for Camp Jefferson Davis, and from this point returns were filed monthly, through October of that year. They reflect a high rate of turnover, as troops were discharged or transferred, as new recruits arrived on assignment, and as new admissions were made to the functioning Army hospital (NARS Microcopy M-617, #1516). These military returns are quite detailed in content, giving a summary of all general orders for each month, tallies of personnel (and horses) present, summaries of desertions, transfers, new recruits, hospital admissions, deaths, and other similar information.

The aggregate totals from the establishment of the post through the end of August show a progressive decrease, primarily due to discharges and transfers. In late July the total troop strength was at 1,949, down from 2,192 earlier in the month. During August more than 300 more were discharged, with a final tally of 1,545. By presidential direction, most officers on active duty were discharged by the Adjutant General on July 7 (Report of the Adjutant General of the Army, Nov. 30, 1848; Ex. Doc. 1:170ff; 30th Cong., 2nd Sess.).

Again by presidential direction, the United States Army was reorganized in late August, by combining regiments of new recruits into two geographical divisions (Eastern and Western), with specified strengths given for various military posts. General Twiggs, then in command at Camp Jefferson Davis, was ordered to report to Major General Taylor at Baton Rouge, the commander of the Western Division (Report of the Adjutant General of the Army, Nov. 30, 1848; Ex. Doc. 1:170ff; 30th Cong., 2nd Sess.). Evidently Camp Jefferson Davis, having been established at the beginning of summer primarily for the mustering out of troops, was seen to have served its purpose, and did not figure further to the high command in the permanent defense of the Gulf Coast. The deed to the Greenwood Island property was belatedly confirmed on August 2, 1848, due to questions that had arisen as to whether or not the property had been in fact part of the Krebs grant (Jackson County, Mississippi, Deed Book 9; NARS RG 92, "Greenwood Island"), and thus whether or not Jacob Baptiste and his wife were the true owners.

The total force at Camp Jefferson Davis was increased to 1,813 troops in September, reflecting the arrival of two newly created regiments of recruits that were to comprise part of the Western Division "peace establishment." This assignment was only temporary, however, and all but one regiment of infantry were removed the following month. A prominent visitor during September was General Zachary Taylor, then on vacation at East Pascagoula (Cain 1962:54). With the "sickly season" over, the Camp Jefferson Davis force of about 1,500 presumably reported to Baton Rouge along with their commander as ordered. Left at the camp were 189 troops (who were to remain through October), under the command of Captain W.H. Gordon, the hospital staff, and the current hospital inmates. By this time the hospital was under the charge of Dr. Henry A. Steiner (NARS Microcopy M-617, #1516).

At any particular time during this summer of 1848 there do not appear to have been a particularly large number of hospitalized soldiers. For example, only six were under treatment on July 25. But the mortality

figures reveal a somewhat more substantial prevalence of fatal maladies. There were 36 deaths during July, 41 more in August, and 19 in September. If we conjecture that these victims were routinely buried in the camp cemetery, the cemetery might have held 96 interments by the end of the first summer.

Despite the fact that Camp Jefferson Davis had been abandoned by all regular infantry by November of 1848, the hospital continued in operation. There were several new admissions during November and December. A small Army hospital staff remained at the post through the winter and spring of 1848-1849, though we have little record other than of their mere presence.

Thus the life span of Camp Jefferson Davis at its height was over in a few short months. For the preceding summer it had been a bustling tent city with a hospital, kitchen, and officer's quarters, housing at first over one-fifth of the entire Army expeditionary force returning from Mexico. Several regiments of infantry, artillery, and mounted dragoons had been temporarily stationed there. The reservation was never again to be reoccupied at this level of intensity.

Nonetheless, the value of Greenwood Island as a supposed epidemic free place to send troops for the summer months was not forgotten. By July of 1849, the decision had been made to station the 4th Artillery Regiment there for the duration of the summer. Thus on July 19 the camp was reoccupied by 122 troops under command of Brevet Major John H. Miller. Also arriving for hospitalization on July 26 were 17 soldiers from various units, formerly under care at New Orleans Barracks. The post's earlier name of Camp Jefferson Davis had no official status, the reservation being known in Washington simply as the "Greenwood Island Military Reservation, East Pascagoula." Miller was thus free to rename it, and this he did. His first post return bears the name "Camp Twiggs," after its commanding officer the year before.

Major Miller, however, was not enthralled with the conditions at Camp Twiggs. Within a few days of his arrival, Miller wrote to the Quartermaster General in Washington, T.S. Jesup, complaining of a dire need for repairs. He found it surprisingly dilapidated since the year before. The garrison wished to quarter themselves within the buildings compound, but the roofing material, being made of unseasoned pine, had warped extensively and was riddled with leaks. A temporary solution had been found for the buildings occupied by the Medical Department by covering the roofing with tarpaulins, but this expedient was clearly unsatisfactory in the long run. Since Miller was convinced that the post was to be occupied seasonally for years to come, extensive repairs to these buildings seemed an immediate priority.

General Twiggs added a note in the margin of Miller's letter. "The buildings [Dusenbery] constructed in grate haste last summer . . . could not be built to meet the exigency of the case as they should have been." Twiggs further recommended that new sills be added beneath the buildings, since the posts in the ground upon which they rested had already begun to decay. He recommended that the troops of the garrison do the actual repair work, rather than by contract.

Quartermaster General Jesup obviously disagreed with the necessity for this new work. A further note in the margin, apparently penned in Washington, reads as follows. "All the troops are to be removed from Pascagoula, no repair therefore necessary this season. Aug. 7, '49" (NARS RG 92, "Greenwood Island").

Major Miller's regiment was largely removed from Camp Twiggs within a matter of weeks, the exact circumstances being unknown. On August 13, 1849, Assistant Surgeon Henry H. Steiner returned from an assignment at Fort Pike to assume command of the post. A small contingent of only 19 persons were still present, eight of which were hospitalized and the remainder representing the hospital staff (NARS Microcopy M-617, #1516) and a small garrison. This garrison consisted of C Company of the 4th Artillery, which at the end of August still shared the barracks compound with the hospital staff and inmates (NARS RG 92, "Pascagoula, Miss.").

During August, September, and October, 1849, the population of Camp Twiggs under command of H. H. Steiner remained stable at 19, including five to eight hospitalized (NARS Microcopy M-617, #1516). Steiner, apparently, was no more satisfied about the working conditions at the year-old reservation than was Miller before him. Two exchanges of correspondence between the post and the army command in Washington, during September and November 1849 respectively, concern the lack of money, the lack of supplies, and the lack of needed repairs at Camp Twiggs. As of August there were little or no operating funds on hand; Steiner consequently requested a credit of five hundred dollars from the "hospital fund" to cover expenses. As of September 19 these funds had yet to be obtained because of difficulties encountered in finding an appropriate source.

By mid-November Steiner, seeing that the post was not about to be abandoned as Jesup had predicted, was fully intent upon necessary repairs to the rapidly deteriorating facilities at the camp. In a report to the Deputy Quartermaster General in New Orleans dated November 14, 1849, Steiner spelled out the urgency of these repairs.

The present rooves are made of unseasoned pine boards, which have so warped and cracked, that all of the houses are now unfit to be occupied, except in parts covered by paulins The wharf to the inner pier is in a dilapidated condition and irreparable, and as a new one must be built before the post is again occupied by troops, I respectfully suggest that it be made to the outer pier, by which the government, in p[?], would be saved much expense, as troops could be embarked [and] debarked and vessels loaded and discharged without delay; li[gh]terage dispensed with, and demurrage prevented. None but steamboats of the lightest draught can get to the inner piers, and these only at high tide [Concerning the buildings], the floors are covered with water by every hard rain, and continue being wet and damp from being shut in from wind and sun (NARS RG 92, "Greenwood Island").

Steiner estimated that seven of the main 100 by 50 foot buildings should receive shingle roofs, and three estimates for these repairs and the pier extension were forwarded to New Orleans.

This request, however, was apparently not even considered until four months later, during which we must suppose that the conditions at Camp Twiggs worsened even further. Beyond October, 1849, no further post returns were submitted by Steiner. Thus we do not know precisely when the hospital was abandoned. In March of the next year (1850), however, Colonial Hunt at New Orleans finally got around to submitting to Quartermaster General Jesup the estimates for repairs gathered previously by Steiner. Although Jesup's office duly noted the low bid offer in the margin of Hunt's cover letter, it is unlikely that any action was taken. The suggested pier extension, at least, does not appear to have been built, since the old inner and outer pier arrangement is shown on a map of the area dated 1852.

Some time before 1851, however, the post was again defunct, for the time being. In that year a certain Colonel Clary enlisted a local resident, Antonio Marenovich, to be custodian of the Greenwood Island reservation at a salary of 25 dollars per month. Marenovich was to live on the island, his instructions being confined to "keeping off trespassers." He would gain exclusive oystering rights in Bayou Casotte (NARS RG 92, "Greenwood Island Property, Miss.").

Meanwhile in Washington, another project was gaining momentum. It had been General Winfield Scott's plan for more than a decade to establish a series of U.S. Army asylums for old and destitute veteran soldiers. After much difficulty over several years in passing an appropriate bill in Congress, one was finally pushed through under Jefferson Davis' sponsorship in March of 1851.

Soon afterwards a committee was set up to determine a suitable "western" location for the planned asylum. The site first to be authorized was New Orleans Barracks, at which supplies were to be drawn from the barracks quartermaster. As eligible inmates arrived, however, they were reluctant to remain after having discovered that the new asylum was really just an army post and not the separate "old soldier's home" they had envisioned. As Goode (1957:29) puts it, they "decided to take their chances on uncertain charity rather than live as unwanted poor relations." By March of 1852 General Twiggs had submitted a report to the asylum board recommending the closing of the New Orleans branch, and his recommendation was accepted.

In May of the previous year, however, the asylum board had authorized a second branch to be established at East Pascagoula. The original thought was to use the now abandoned facilities on Greenwood Island for the asylum, subject to the President's approval. Pascagoula was deemed appropriate again because of its healthful climate, thought to be beneficial for potential inmates who had contracted tuberculosis or other diseases. According to Goode, only two of the original ten 100 by 50 foot buildings on the the reservation were still standing and usable for the asylum's purposes as of mid-1851; possibly the others had been dismantled.

Nevertheless, the President did not approve the use of Greenwood Island for the asylum, and so arrangements were made to purchase the larger adjoining tract to the north, owned by Jacob Baptiste. The selection of this lot for the asylum was approved in March of 1852. The asylum

began operation in October of 1852, apparently at a pre-existing house previously owned by Baptiste, located across Bayou Chico opposite Greenwood Island. It was maintained here until September of 1855, at which time it was closed because of the small remaining number of inmates (Goode 1957).

The establishment of this asylum in East Pascagoula furnished the occasion for the third military occupation of Camp Twiggs on Greenwood Island. In May of 1852, after the approval of the Baptiste tract for the asylum but prior to its opening, the 1st artillery regiment from New Orleans Barracks was temporarily assigned to Camp Twiggs for the duration of the summer. Present were a total of 113 troops under command of Lieutenant Samuel Jones. The idea behind this assignment is unclear, but it may have been similar to the rationale previously used in 1849 for stationing troops on the Gulf for the summer months. However, it probably also had something to do with establishing the army asylum, since the first order posted by Lieutenant Jones at Camp Twiggs was a copy of the congressional act to found the Pascagoula branch of the asylum (NARS Microcopy M-617, #1516).

Post returns were prepared monthly from May until September of 1852. There was a change in commanding officers in June, when Brevet Lieutenant Colonel George Nauman arrived to assume authority. There were 113 troops present during June, 108 present during July and August, and 101 present during September. These returns also show that three soldiers of the 1st artillery were hospitalized at Camp Twiggs from July through September, showing that at least a small hospital facility had been re-established at the post (NARS Microcopy M-617, #1516). Although the asylum was in operation by October, the deed to the Baptiste place was not legally finalized until the following spring of 1853.

The fourth and final military occupation of Greenwood Island took place during the summer of 1853. In May of that year, a garrison of 56 soldiers was assigned to Camp Twiggs. This garrison remained until September, as had been the case the year before. Other than the information contained in post returns (NARS Microcopy M-617, #1516), we have no information concerning life or conditions at Camp Twiggs during these two final episodes of summer occupation. The last piece of correspondence at hand relating to the 1853 military occupation is a letter from Lieutenant James B. Fry, penned at Camp Twiggs, to the Commissary General of the Army. Fry complained that because of spoilages the contract system of obtaining local food supplies was working poorly. He requested that such supplies be obtained through the commissary at New Orleans Barracks. Fry must not have known that the garrison was to be permanently withdrawn within a month.

After 1853 Antonio Marenovich remained on Greenwood Island as the official salaried caretaker. He built a house for his residence on the shore of Bayou Casotte, due east of the military compound, and to the west and south of this house Marenovich planted a large garden. He also built two wharves: one jutting eastward into Bayou Casotte from his house, and another jutting southward into Mississippi Sound from the southeast point of the island (NARS RG 92, "Greenwood Island Property, Miss.").

From this point the army apparently lost all interest in maintaining the Greenwood Island property for military purposes. Early in 1856, an officer from New Orleans wrote to Major General Jesup in Washington, suggesting that the remaining usable cisterns on the island be recovered and sold, before exposure to weather should render them useless (NARS RG 92, Greenwood Island correspondence). Finally in 1860, a major hurricane flattened all remaining military structures on Greenwood Island, but evidently spared Marenovich's house.

Antonio Marenovich fled the island upon the outbreak of the Civil War, to avoid conscription in the Confederate Army. In 1862 he continued in the employ of the U.S. Government in New Orleans, while his housekeeper, Letitia Lyons, remained at the Greenwood Island house in order to protect it from destruction for the duration of the war. In 1865 Marenovich returned to be reinstated as keeper of the island for the army, this time, however, without pay. He served in this capacity until his death in 1879 (NARS RG 92, "Greenwood Island Property, Miss.").

Not long after the war, General Harreck instructed a certain Colonel Batchelder to visit the island and to make a report on conditions there. Batchelder conducted his inspection in March of 1870. Finding Marenovich's home the only improvements still remaining, Batchelder described it as "a small rough board house of three (3) rooms and an outhouse of one room." At this time Marenovich was occupied mainly as an oyster fisherman, but he also rented space in his house as a summer resort. Batchelder's recommendation, which was approved, suggested that Marenovich be allowed to remain without pay, compensated only by the use of the land and by exclusive rights to oystering in Bayou Casotte. In connection with Batchelder's report on the hurricane-demolished military facilities on Greenwood Island, he noted that there were "no graves" on the premises. Perhaps this mistaken impression was due to the destruction of wooden grave markers by the hurricane of 1860, but it might otherwise be the case that Marenovich himself had removed any markers, since his house and garden plot lay almost precisely where the two graves were discovered in 1979. In any case, it seems odd that Marenovich did not tell Batchelder of the presence of the cemetery (NARS RG 92: "Greenwood Island Property, Miss.").

Probably by this time the area of the former hospital and barracks compound was reverting back to its natural condition (as shown on a survey map of 1900), being a grove of pine, cedar, and liveoak established on the shell midden base. When General Sully elected to encamp at East Pascagoula in 1872, he preferred to quarter his unit on the old asylum property rather than on Greenwood Island.

Antonio Marenovich died on February 11, 1879, causing renewed government interest in the island as the question arose concerning his replacement as caretaker. The Secretary of War in Washington received an immediate application for the position from Dr. Stephen A. Moore of Pascagoula, together with endorsement from prominent citizens of that town. Moore offered to take the position without pay, his motivation presumably lying in plans to take over the lucrative oystering interest there. Moore's application was referred to the Army Quartermaster General's office for a report.

The local depot quartermaster at New Orleans, Captain McGonnigle, was therefore dispatched to Greenwood Island to prepare another inspection report, and to inquire about Moore's intentions. McGonnigle's report (NARS RG 92, "Greenwood Island Property, Miss.") first comments upon the suitability of the island for a contemplated rebuilding of the military quarters there. He reported that "Greenwood Island is well adapted for a Summer Camp of Troops. The bathing is excellent, the fishing and oysters good and the location considered very healthy." Noting that the previous hurricane of 1860 had been exceptionally severe and was unlikely to recur in the near future, he pointed out that new balloon frame buildings raised upon piles of five feet elevation could probably last for "half a century," if that were desired. McGonnigle also visited the abandoned asylum property and noted the presence of Mexican War period graves there, but makes no mention of any graves on Greenwood Island.

Marenovich's house was found to be in dilapidated condition, but still inhabited by his former housekeeper Mrs. Lyons, and also by Marenovich's niece and her husband John Jones. Mrs. Lyons denied the assertion by the new applicant, Dr. Moore, that she approved of his potential appointment. In fact, she pointed out to Captain McGonnigle that the desirability of the position was solely due to the efforts of herself and Marenovich to cultivate the oyster beds over the past thirty years residence. McGonnigle was sympathetic to her desire to remain at the old Marenovich place, but nevertheless recommended that the position of caretaker be given to "some good steady non-commissioned officer." Dr. Moore turned out to be unsuitable for the purpose, since it was soon discovered that he had no intention of residing on the island. If an appropriate non-commissioned officer was not available for this service, McGonnigle recommended that the appointment go to John Jones, Marenovich's niece's husband and current male resident of the island. The outcome of all of this, after considerable review in Washington, was that Dr. Moore's application was denied and the appointment granted to Mr. Jones (NARS RG 92, "Greenwood Island Property, Miss.").

That being settled, apparently Mrs. Lyons, Jones, and wife at some point built a new house, this time on the Mississippi Sound frontage of the southeast part of the island. This house is shown, with two or three outbuildings, on a detailed survey of the island prepared in the year 1900. This map shows a new garden plot southeast of Marenovich's original one. The Bayou Casotte pier is now missing, but the one extending into Mississippi Sound is still present. Adjacent to it is shown a permanent tidal trap for the capture of fish.

The final years of the nineteenth century are obscure ones. According to Higginbotham (1967:30), the final residents of the island while it was still in government hands were Mr. and Mrs. George Delius, who are said to have been driven out by a hurricane in 1895 (1893?). If true, they may have been the final caretakers of the island, but no confirmation of this has come to light during research in the National Archives.

The United States Congress, in 1884, approved "An act to provide for the disposal of abandoned and useless military reservations." Accordingly, in December of 1890, the Secretary of War transferred Greenwood Island to the Secretary of the Interior for disposal (U.S. Army Adjutant Gene-

ral's Office, General Order No. 147, Dec. 16, 1890). Ten years later the property was surveyed in detail and divided into two lots on either side of a north-south survey line. A copy of this survey was deposited in the Jackson County, Mississippi, township plat book. The two lots were finally deeded to private parties in November of 1903 (Jackson County Deed Book 9:177-179).

As a final note concerning the disposition of the Camp Jefferson Davis/Camp Twiggs cemetery, we find the following passage in the WPA history of Jackson County, which is worth reproducing verbatim, since no confirmation of this has been yet recovered in government archives.

While stationed at Camp Jefferson Davis, soldiers who died were buried on a lot adjoining the camp. In March 1895, "Mr. Del Norte," special Agent of the War Department at Washington, came to Pascagoula and made some excavations on the lot and found remains which were supposed to be those of the men belonging to "Shield's Brigade," who died at Pascagoula shortly after their return from Mexico in 1847 . . . [In] 1907, the remains of the veterans were removed to the National Cemetery, in Mobile, Alabama."

From the evidence discovered on Greenwood Island in 1979, it appears that Mr. Del Norte's excavations did not discover all of the graves present. We do not know what still remains intact of the nineteenth century remains on Greenwood Island. Evidence should be expected, though, of military occupation from 1848-1853, and of domestic occupation at two house sites from 1851-1893. It should be emphasized, too, that our brief archival searches do not by any means exhaust potential sources on the nineteenth century history of this locality.

CHAPTER 4

PREVIOUS ARCHAEOLOGICAL RESEARCH IN THE PASCAGOULA REGION

As Dave Davis has recently written, "if Gulf Coast archeologists agree on one point without hesitation, it is that Mississippi represents the major gap in published archaeological data." This applies not only to published work, but to unpublished research as well. There is a definite dearth in both original systematic research and synthetic statements concerning the archaeology of the Mississippi Gulf Coast. Consequently there is not much to tell. The available sources have all been used in the preparation of the short synthetic statement included in Chapter 2 of this document, which, despite its brevity, is itself one of the very first prehistoric chronological syntheses to be produced for this area.

Mississippi Sound, being accessible to light-draught steamboats, was not neglected by Clarence B. Moore in his archaeological adventures in the Southeast in the first decade of this century. Despite his digging in several important sand mounds mentioned in Chapter 2, Moore was unimpressed, giving up in short order after "disappointing" results (1905). Calvin Brown's early synthesis of Mississippi archaeology, appearing in 1926, devotes a total of four pages to the Mississippi Coast. Besides mentioning a few shell midden sites in the Biloxi area, at least one of which had been explored as early as 1886, Brown was content merely to repeat the findings of Moore (Brown 1926:30-33).

In a Works Progress Administration inventory of 1933, Moreau Chambers recorded the important Gautier site (22Ja513) on the western side of the Pascagoula River delta. This site was also noted during Neitzel's "Pascagoula Basin Survey" in 1966 for the National Park Service. Other minor excavation and reconnaissance in the Pascagoula area during 1959 was briefly carried out by William Lazarus at four sites, for which he prepared unpublished notes (Lazarus 1959a, 1959b, 1959c, 1959d, 1960a, 1960b, see also Dilworth 1979).

Survey and excavation research, all unpublished as of this writing, was intermittently pursued during the late 1960s and 1970s by the Mississippi Coast Historical and Geneological Society, sometimes in conjunction with the University of Southern Mississippi, under the direction of Mr. Dale Greenwell. An outline of this work has been recently summarized (Greenwell n.d.), and much of it has been discussed in Chapter 2 of this volume. The Gulf Coast Chapter of the Mississippi Archaeological Association has also sponsored survey and some excavation research, the most important being the Big Greenwood Island site (22Ja516) in Jackson County, and at the "Ancient Earthwork Fortification" site (22Ha585) in Hancock County (Williams n.d.), under the auspices of the Mississippi Department of Archives and History.

Project-specific cultural resource management studies have been

undertaken in the area during the last decade. These have been entirely limited to small scale survey and limited testing projects, with the important exception of Richard Marshall's (1982) excavation report on the Goode Lake sites on Escatawpa River, which encountered several intact prehistoric site components and which resulted in brief comparative statements by Marshall concerning the regional prehistory. Other survey projects in the area include those of Greenwell (1977a, 1977b, 1981a, 1981b), Hyatt (1977), Wright (1980), and Crusoe (1980).

Finally, we frequently refer in this report to the recent work conducted on Greenwood Island by the Office of Archaeological Research of the University of Alabama. This archaeological testing and evaluation program focused upon the Big Greenwood Island site (22Ja516) and the Little Greenwood Island site (22Ja618) (Solis and Walling 1982).

Previous marine archaeological research along this portion of the northern Gulf Coast is also extremely limited. While no marine investigations occurred in the Pascagoula area proper prior to this study, at least three small studies have been performed in the region. Hudson (1973) inspected via magnetometer survey the suspected location of a sunken French colonial vessel in Biloxi Bay. Mistovich (1980) and Hudson (1981) have conducted remote sensing surveys for cultural resource management purposes in Biloxi Bay and off the western end of Dauphin Island, respectively. These investigations were all primarily Phase I reconnaissance efforts, with no subsequent identification and evaluation of recorded anomalies performed to date.

National Register of Historic Places Properties For Jackson County, Mississippi

A search of the files on deposit at the Mississippi Department of Archives and History in Jackson, Mississippi revealed the following six properties currently listed on the National Register of Historic Places for Jackson County, Mississippi. No properties are currently pending in the nomination process. Further, none of the six properties listed occur within the limits of the current survey and none will be affected by the proposed harbor improvement project. The properties are as follows:

Old Spanish Fort (Old French Fort). 200 Fort Street, Pascagoula, Mississippi.

Colonel Alfred E. Lewis House. Gautier, Mississippi.

De Groote Folk House. Highway 613, Hurley, Mississippi.

Louisville and Nashville Railroad Depot at Ocean Springs (The Whistle Stop). Ocean Springs, Mississippi.

Pascagoula Central Fire Station No. 1 ("Old Fire Station"). 623 Delmas Avenue, Pascagoula, Mississippi.

CHAPTER 5

SUMMARY OF WATERCRAFT TYPES OF PASCAGOULA, MISSISSIPPI

by

Eugene M. Wilson

The settlements around the lower Pascagoula River shared many characteristics of other ports of the northern Gulf Coast that were once part of colonial Louisiana. In general, all these places were isolated by streams, swamps, and marshes until the completion of the railroad across coastal Mississippi in 1869. There is little specific information on the vessel types in use prior to about 1870 and there may have been some interesting variations of vessel types in general use. The total number of vessel types used on the Gulf Coast is rather large. Most of these have been described in a previous study of Mobile Bay (Mistovich and Knight 1983). This summary will include only the most important vessel types used at Pascagoula since the last half of the nineteenth century with some notes on their uses.

Probably the first commercial shipyard in the Pascagoula area was that established by Ebenezer Clark. Clark came from New York and went first to Mobile, then opened a yard six miles north of Moss Point in 1843 which operated until 1856. His work at Pascagoula was primarily repairs and he built only four new vessels, a steamboat and three schooners (Knight, personal correspondence, June, 1983).

Although the Krebs family has been in Pascagoula since c. 1730, the Krebs commercial boatyard was not established until 1883 or 1885. It is the oldest continuously operated boatyard at Pascagoula (Daily Herald 1958; Ziglar 1974), with four generations of wooden boat builders. The names of other yards also reflected the presence of European descended boat builders: de Angelo, Flechas, Frentz, Piaggio, Poitevant, Pol, and Toche, whose fishing or building experience contributed to the Pascagoula industry.

The first reasonably accurate reports on vessel types and the fishing industry were done in the 1880s for the federal government. These reports describe the general picture state by state, however, the observations appear to have been made by persons more accustomed to conditions on the northeast coast. The Southeast comes off appearing fairly primitive, as possibly it was. Coastal Mississippi was very close economically to New Orleans. In 1880, most of the 300 fishermen of the Mississippi coast were ". . . engaged in the oyster business for the New Orleans market, using boats and nets (from) that city" (Goode 1887 II:574). At this time, some forty men and about eighteen vessels were used in gathering oysters for the Mississippi markets. In 1878, the first shrimp cannery on the Gulf Coast was built at Pascagoula (Scranton) (Cain 1962:47). This company

began a canning operation for oysters, shrimp, fruit, and vegetables that shipped through Mobile (Goode 1887 II:574).

Finfish landed at Pascagoula, both freshwater, or "greenfish" as they were called, and saltwater species, were mostly sent to the Mobile market. Seines were used offshore and gill nets were used mostly in the inlets, bayous, and rivers for freshwater fish. The gill nets used on the Gulf Coast were introduced from the Northeast in the early 1880s and were made in Boston or New York. The cast net, still in use in the 1980s, was brought from Florida where it was first used by the Spanish at St. Augustine (Goode 1887 II:574-575; 1887 V:569). The cast net was used for catching shrimp as well as mullet and other school fish.

The New Orleans oyster trade area included all of Mississippi Sound, the Chandeleur Islands, the Mississippi River delta, and the Louisiana coast almost to Galveston. The number of oyster vessels in this area in 1880 numbered 205 and all were luggers, a brightly painted, shallow draft centerboard boat, from 16 to 40 feet in length, with a single rectangular dipping lug sail dyed red-brown. Nearly all of the oystermen were Italians and Sicilians who, in their own organizations, also controlled the unloading of all cargo from the luggers at New Orleans, including oysters, citrus, and other fruit (Goode 1887 II:580-581).

In the shipyards on the Calcasieu, the Pascagoula, on Lake Pontchartrain and at Shieldsboro (Biloxi), Mississippi, large numbers of luggers were built every year, mainly of cypress and pitch pine. The largest were 30 to 40 feet in length and 10 to 12 feet in breadth (Hall 1884:39). Although used by these Mediterranean immigrant fishermen, the lug sail rig dates at least from 1807 (Morris 1927:72). The luggers that survived the late nineteenth century and early twentieth century were converted to engine power and a rear wheelhouse was added (newspaper file, Louisiana State University library). The name lugger is still used for a non-planing, round bottom shallow draft, rear wheelhouse, inshore vessel about 40 feet in length used for oystering and shrimping.

Another vessel used on Mississippi Sound was the "Biloxi" schooner, which was influenced by the sailing lugger, and boats from Chesapeake Bay (Toops 1980:81). The early Mississippi Sound schooners were around 40 feet long and barge-like; they reflected the individual style of the builders, which included European immigrants. After the 1893 hurricane that destroyed much of the fishing fleet, the schooners were more uniform in lines and size, 50 to 65 feet in length, 20 to 24 feet in breadth, with a nearly flat bottom, shallow draft, centerboard, sharp clipper bows, and two masts. Around 1920 about 750 schooners were reported as having Biloxi as home port (Toops 1980:83), a number that seems optimistic. Many photographs from this period, however, clearly show the dominance of the schooner on the Mississippi Coast. The schooners remained until the law requiring oyster dredging only from sailing vessels was changed in 1933 to permit dredging by motor vessels. The conversion of sail to engine power was immediate and possibly only two of the original pre-1933 oyster schooners remain. Schooners were still built for recreation or other special fisheries until the mid-1960s.

Not all Mississippi schooners were shallow draft, inshore vessels. A deep water version has been produced for several decades by Gulf builders including the Krebs yard at Pascagoula and Landry's yard at Bayou La Batre that has come to be known as a "snapper boat." Snapper fishing on the Gulf Coast began in the 1840s but not until 1874 was this fishery developed commercially. New England fishing schooners were first chartered for snapper and grouper fishing off west Florida. The original center of this fishery was Pensacola where two companies were established by 1881 (Goode 1887 V:588). The boats were two-masted schooners and have remained the basic vessel type. In 1900 the Star Fish and Oyster Company was founded in Mobile and by 1946 it had become the largest shipper of snapper and grouper on the Gulf Coast (Southern Fisherman 1950:37). The Krebs yard at Pascagoula built more than thirty schooners for Star Fish and Oyster (Daily Herald 9 May 1958) which has five auxiliary schooners still in operation. These boats have only recently, in the late 1970s, been converted primarily to engine power and still retain the mainsail as a steadying sail. Elsewhere, sails were earlier replaced entirely by engines. The characteristic snapper boat, however, retains the rear wheelhouse and hull lines of the older auxiliary schooners. The deck of the snapper boat is covered with a canvas or wooden canopy to shade the deck and line reel stations. The same type, I have observed, is now built in Campeche, Mexico, where the northern Gulf boats used to fish before restrictions were imposed by Mexico.

World War I brought on a boom in shipbuilding, mainly of wooden vessels, and the establishment of The International Shipyard by Italian interests to help rebuild the Italian merchant fleet and to develop Latin American trade. Few vessels were completed before the value of the Italian lira dropped and the company closed (Ziglar 1974:4-6). Two unusual vessels were built in 1919-1920, however. These were large wooden five-masted barkentines, the MONFALCONE and MOLFETTA, 282 feet by 46 feet by 23 feet and 284 feet by 46 feet by 23 feet, respectively (Merchant Vessels 1924), built to carry coal and lumber. These were probably the largest sailing vessels built at Pascagoula.

The lumber industry beginning in 1853 (Women of Trinity Episcopal Church 1971) had by 1882 made the Pascagoula area possibly the largest pine lumber milling and exporting center in the United States (Mississippi Press 3 June 1971). The largest mill was that of the L.N. Dantzler Lumber Company, which also owned its own fleet of barges, tugboats, and schooners and later established the Dantzler Shipbuilding and Drydock Company. In many photographs of the Pascagoula area made during the period 1880-1920, three- and four-masted schooners were commonly used for carrying lumber, probably in the coastal trade. Three to five-masted barkentines, barks, and ships carried lumber to overseas ports. Swedish and Norwegian vessels, mostly three-masted barks, were common foreign carriers.

With the development of the otter trawl in northeastern Florida and its spread to the Gulf Coast by 1918 (Bryant 1972) a change in shrimp boat design took place. Small haul-nets and cast nets were replaced by single otter trawls mounted on motor luggers that trawled for shrimp in the sound. Some schooners were also changed to single-rig trawlers as old photographs clearly show.

In 1937, offshore shrimp grounds were discovered (Kniffen 1968) and larger vessels, usually with two trawls, began to be built. Possibly as a result of vessel designs of Florida, the wheelhouse was moved forward. Many recent bay or sound shrimp boats, however, have retained the rear wheelhouse position and single-rig.

The large Gulf shrimpers, 70 to 90 feet in length, were built of wood, then of steel, beginning around 1945. It was not until 1968 that the first freezers were used on the shrimp boats built at Bayou La Batre. Onboard refrigeration was first used on a menhaden seiner built at Pascagoula in the early 1950s (Ziglar 1974:11).

The menhaden fishery is dependent upon large schools of the menhaden, a small, oily, smelly fish commonly found in the bays and sound. Its use is largely for oil, fertilizer, and pet food. The vessels employed are engine powered and have a distinctive high forward wheelhouse, a mast with a crow's nest for a fish school spotter, and are 100 to 120 feet in length.

Besides the vessels used as carriers for the major Pascagoula industries, many utility vessels were employed, including tugboats, pilot boats, river and sound freighters, sloops, catboats, launches, skiffs, and dugouts.

Tugboats have retained much the same basic form over the past century. The recent publication, Jackson County, Mississippi, Photographs from the Past (S-Wixon 1982) illustrates three examples of tugboats at Pascagoula. The iron hull tug LEO, built in 1882 at Philadelphia, was a steam screw, 83 feet in length, 19 feet in breadth and 7 feet depth from deck to keel (Merchant Vessels 1889:306). It had the typical raised wheelhouse placed well forward, center engine room and stack and galley and quarters. A canopy extended over the fore and aft deck. The FOX, built in 1878 at Philadelphia, was a wooden hull steam screw with a raised wheelhouse, 62.8 feet in length, 16 feet in breadth, and 5.6 feet in depth (Merchant Vessels 1889:286). It was quite similar to the LEO except it had no canopies. The tug EVA, a wooden hull steam screw, with raised wheelhouse, was built at Moss Point in 1889. It was 56.1 feet in length, 16.1 feet in breadth, and 4.6 feet in depth (Merchant Vessels 1889:284).

The pilot boat PILOT of Pascagoula (S-Wixon 1982) was around 60 feet in length, had the wheelhouse well forward with a long cabin extending well aft. It was a two-masted schooner, probably without engines, since no smokestack is present.

Small sternwheel river or sound freighters are also illustrated in S-Wixon's book (S-Wixon 1982) but were not listed in the annual Merchant Vessels by the Bureau of Navigation. They appear to be around 80 feet in length, of a size appropriate to river use, probably with one engine and without the amenities and fancy wood trim of larger passenger vessels.

Work and recreational sailboats, usually sloop and cat rigged, were built and used all along the Gulf Coast. The catboat was especially popular around the turn of the nineteenth century and beyond to the 1920s with organized races. Recent attempts to revive the catboat rig seem not

to have been successful. The sloop rig, however, is the most popular rig of modern fiber reinforced plastic, or "tupperware," recreation sailboats.

Engine powered launches were one of the common vessels of the past century. They were widely used for ferrying commuters, work crews, and general recreation and they frequently appear in old photographs. The launches were from about 25 to 45 feet in length, had a narrow hull, had a canvas or wooden canopy over most of the hull and sometimes were enclosed with windows, resembling a sightseeing vessel.

Open rowing skiffs were numerous and widely used everywhere along the Gulf. Many were rigged with a spiritsail and were sometimes referred to as a "catrigged skiff." Lionel Eleuterius of Ocean Springs, whose father was a small boat builder, built more than 30 skiffs as a youth (Eleuterius interview, 19 June 1983). Skiffs must have had a wide range of designs. They served as transportation and general purpose river and bay fishing boats.

The dugout "canoe," associated with the aboriginal and early European contact period was also common. Mr. F.W. Cirlot of Moss Point has a 1940 photograph of his family's dugout, which, he said, were commonly used by Moss Point residents (F.S. Cirlot interview, 29 June 1983). It would be difficult to distinguish this boat from the colonial period dugout boats.

Given the long period of boat building in the Pascagoula area, it would not be surprising to find a large number of the remains of vessels along the shores of the rivers and bayous.

CHAPTER 6

DOCUMENTARY RECORD OF SUBMERGED CULTURAL RESOURCES

Introduction, Research Procedures, and Source Materials

A large portion of the documentary and archival research conducted by the Chief Researcher under the terms of this contract was devoted to records pertaining to submerged cultural resources. Such a level of effort is considered necessary and appropriate to a cultural resource survey of preliminary and exploratory nature. The results are of obvious value to cultural resource management within the region, as future studies may benefit from a general knowledge of the distribution of submerged resources, and from an inventory of specific potential shipwrecks and documented locations.

The general goal of this study has been to generate a systematized and reasonably thorough body of documentary data, taken from a variety of sources, regarding submerged cultural resources in the Pascagoula Harbor area. The methods employed and the sources used in this effort, to be described below, have been modeled by prior experience in a similar study of Mobile Harbor (Mistovich and Knight 1983:61-135). Reference is made to the latter study for further comments concerning the rationale for the research procedures and potential uses (and misuses) of the data.

Despite the fact that neither the shipwreck inventory presented in this chapter nor the locational information presented in the Index Volume can be considered complete or even statistically representative in any reasonable sense (Mistovich and Knight 1983:64-65, 70-71), the data are a marked improvement over that previously available (Berman 1972, Coastal Environments 1977). Our aim has been to improve the quantity of this prior knowledge, and at the same time to improve its quality by expanding and systematizing the categories of information gathered for each case.

As was the case for the OSM study of Mobile Harbor, it has been judged inefficient to attempt to limit the documentary research to the specific narrow strips of harbor area corresponding to channel and disposal sites. Not only is a larger study area desirable from the point of view of obtaining an idea of the general areal distribution of submerged resources, but it is equally important to identify the range of known shipwrecks in the area which are unlikely to be found in the specific survey tracts, based upon documentary data.

Consequently an arbitrary boundary was determined for the documentary and cartographic study. This boundary, shown on Map 1 of the accompanying Index Volume, encompasses Mississippi Sound roughly from Petit Bois Pass on the east to Bellefontaine Point to the west. The southern margins of Horn Island and Petit Bois Island are included, as is Horn Island Pass Channel and its surroundings. To the north, the boundary on Pascagoula

River is arbitrarily put at the latitude of Lowry Island, north of the city of Pascagoula and below Moss Point.

Two general classes of data were employed in this research. On the one hand are previous shipwreck inventories, current navigation hazard lists, shipping registries, newspaper accounts, and other historical works and compilations relating to shipwrecks within the study area. On the other hand are cartographic data, mostly in the form of navigation charts showing marked shipwreck locations, dating from about the Civil War to the present. These cartographic data, while they provide a valuable source of locational information on shipwrecks and other submerged cultural resources, normally cannot be reconciled with shipwreck data gathered from other sources. This mismatch of documentary sources (Mistovich and Knight 1983 (Index Volume):1, 6) requires that they be analytically treated separately. The cartographic sources will thus be reviewed in the Index Volume to this report, as used in the compilation of a map of documented wreck locations in the study area (Map 1). The other documentary sources have been used to prepare a shipwreck inventory list, presented in this chapter.

The first listing (Table 3) comprises the inventory proper, excluding "disqualified" vessels (see below), and thus represents the known repertoire of wrecks potentially still submerged. There are 72 entries, here arranged chronologically by date of loss, covering the period from 1780 to present. A wide variety of vessel types are represented, constituting a cross-section of historic maritime activity in the region.

The second listing (Table 4) gives limited data on those losses which have been disqualified from the main inventory. The grounds for disqualification are given, the main criterion being a reasonable certainty that the entries no longer constitute potentially submerged cultural resources within the imposed study limits. They are included here in order to avoid possible confusion regarding precisely which wrecked vessels are good candidates for current wreck correlations. (A number of vessels disqualified here have been included in previous shipwreck inventories of the northern Gulf Coast). This listing includes 46 entries, alphabetically arranged, giving the vessel type and date of loss.

The research effort involved in preparing this inventory and the cartographic data presented in the Index Volume entailed visits to several research facilities. Principal among these were the National Archives and the Library of Congress in Washington, D.C., the NARS Cartographic Center in Alexandria, Virginia, the G.S.A. Archives in East Point, Georgia, the Pascagoula City Library, the Technical Library of the Mobile District Corps of Engineers, the Tulane University Library in New Orleans, Louisiana, the Mobile Public Library, the Mississippi Department of Archives and History in Jackson, Mississippi, and the Amelia K. Gorgas Library of the University of Alabama.

A general procedure for standardizing the data gathering, first implemented by OSM in the Mobile Harbor Cultural Resource Survey (Mistovich and Knight 1983:62-71), was repeated in outline for this project. It was established beforehand that for each vessel, data would be gathered on name, any former names or alternate names appearing in the documentation,

registry number (for merchant vessels and yachts), gross and net tonnage, standardized dimensions of length, beam, and depth, the year and place of construction, the home port and nationality, disposition (including date, location, and any relevant details), other notes relevant to the documentation, and principal references. These data were initially entered on 4" by 6" cards, later to be indexed and coded.

At first, a baseline of shipwreck data was established from earlier compilations, most notably Berman's Encyclopedia of American Shipwrecks (1972), the Bureau of Marine Inspection and Navigation's Navigation Casualties, 1866-1910 (1937-1938), Shomette's Shipwrecks of the Civil War (1973), and Coastal Environments, Inc.'s Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf (1977). Following this was an effort to expand the baseline listing in quantity and substance, employing numerous resources.

Shipping registries consulted included the "Loss of American Vessels" feature of the annual government publication of Merchant Vessels of the United States, examined each year from 1906 to present. Other registries consulted on a more limited basis are Lloyd's Register of British and Foreign Shipping, published annually since 1760 by Lloyd's of London, and the American Bureau of Shipping's Record of American and Foreign Shipping, 1867 to present.

Civil War era vessel losses were confirmed mainly by consulting the Official Records of the Union and Confederate Navies in the War of the Rebellion (Daniels 1921), and the United States Navy Department's publication, Civil War Naval Chronology, 1861-1865 (1971).

Newspaper accounts were also examined for shipwreck data. Primary among these were the microfilm collections of the Pascagoula Chronicle (a.k.a. The Star of Pascagoula, The Chronicle Star, The Chronicle Star and Moss Point Advertiser, The Chronicle, The Daily Sentinel Star) and the Mississippi Press, on deposit at the Pascagoula City Library. These form a relatively complete series from 1874 to present. The dates scanned for information were those surrounding otherwise documented vessel losses, and these dates in the aftermath of major hurricanes of the late nineteenth and early twentieth centuries. Those issues reporting local hurricane losses supplied several new shipwreck entries.

Data regarding vessel salvage are always difficult to track down, primarily because much vessel salvage is privately conducted and is not usually considered newsworthy. Those vessels removed by the U.S. Army Corps of Engineers because they constituted navigation hazards are generally documented, however, in summary form within the annual volumes of the Report to the Chief of Engineers (1869-present), and as case reports in the Corps of Engineers archives now on deposit in the G.S.A. Archives in East Point, Georgia. Those salvage reports pertaining to the study area were examined, and contributed to the data contained in Table 5.

Other records of considerable use are the now computerized Hazards to Navigation files maintained by the Aids to Navigation Branch of the United States Coast Guard office in New Orleans, Louisiana. These are of very recent vintage, but they assist to a great degree in filling out the later years of vessels reported lost, those salvaged, and their locations.

Once the shipwreck inventory, as filled out from these various sources, reached a stage nearing completion, further technical data on each named wreck of commercial registry was completed to the extent possible through information contained in the annual list of Merchant Vessels of the United States.

Guide to Entries in the Shipwreck Inventory

Each entry in the shipwreck inventory follows a standard format. Data categories that are missing for a particular vessel are deleted from the inventory record. Entries are organized first by general vessel class, secondarily by the date of loss, and then alphabetically.

Line 1. Entered first, in capital letters, is the vessel's name at the time of loss. Entered below the vessel name are any known former names for the same vessel. On the right hand margin of line 1 is the U.S. merchant vessel registration number, if any.

Line 2. Line 2 gives the type of vessel or type of sail/ motor rig, the service or use of the vessel, and, if foreign, the nationality of origin.

Tonnage. Recorded in gross (g) and net (n) tonnage.

Dimensions. Dimensions are recorded, if known, following the guidelines published in the annual list of Merchant Vessels of the United States (U.S. Bureau of Customs 1867-1967), as follows:

The registry of every vessel shall express her length and breadth, together with her depth and the height under the third or spar deck, which shall be ascertained in the following manner: The tonnage deck, in vessels having three or more decks to the hull, shall be the second deck from below; in all other cases the upper deck of the hull is to be the tonnage deck. The length from the fore part of the outer planking on the side of the stem to the after part of the main stern-post of screw steamers and to the after part of the rudder-post of all other vessels measured on the top of the tonnage deck shall be accounted the vessel's length. The breadth of the broadest part on the outside of the vessel shall be accounted the vessel's breadth of beam. A measure from the under side of the tonnage-deck plank, amidships, to the ceiling of the hold (average thickness), shall be accounted the depth of hold. If the vessel has a third deck, then the height from the top of the tonnage-deck plank to the under side of the upper-deck plank shall be accounted as the height under the spar deck. All measurement to be taken in feet and fractions of feet; and all fractions of feet shall be expressed in decimals.

Year Built.

Place Built. City and state, or nationality if foreign.

Home Port. City and state, or nationality if foreign.

Disposition. The cause, date, and place of loss are given, along with any known descriptive details pertinent to the loss as a potential cultural resource. Categories of causation are to some degree standardized, as follows (U.S. Bureau of Customs 1866-1967).

1. Foundered. Casualties due to leaking or capsizing of vessels, including vessels lost at sea not due to causes 3 or 4.
2. Stranded. Casualties due to vessels running aground, striking rocks, reefs, bars, etc.
3. Collided. Casualties involving impacts between two or more vessels, and between a vessel or vessels and some other floating or fixed object or objects.
4. Burned. Casualties due to fire or explosion.
5. Abandoned. Abandoned at sea.
6. Lost. Self-explanatory causes not included in preceding classifications, and losses of vessels where the cause and/or place is unknown.

Notes. Brief notes on crew size, rig, hull, horsepower, ownership, lives lost, contradicting references, and other pertinent data not covered in preceding categories.

References. Abbreviations are given for frequently cited sources, as follows. Full citations are included in the bibliography.

Ber: Berman (1972)
 CE: U.S. Army Corps of Engineers (1867-1938)
 HN: U.S. Coast Guard (1979-present)
 LMV: U.S. Bureau of Customs (1866-1967); U.S. Coast Guard (1968-present)
 Lyd: Lloyd's of London (1760-present)
 Lyt: Lytle (1952; Lytle and Holdcamper (1975)
 NC: U.S. Navy Department (1971)
 OR: Daniels (1921)
 RAFS: American Bureau of Shipping, "American Lloyds" (1867-present)
 Sho: Shomette (1973)
 WPA: Bureau of Marine Inspection and Navigation (1937-1938)

Table 3. Inventory of Documented Vessel Losses, Pascagoula Harbor Area.

NAMES UNDETERMINED

(Number of vessels lost also unknown)

Class: Bercha

Disposition: Lost, August 23, 1780, between New Orleans and Mobile, during hurricane.

Notes: Lost potentially within study area. Bearing supplies for Mobile.

References: Borja Medina (1980:428n)

HIBERNIA (U.S.)

Class: Ship, merchant

Disposition: Wrecked, 1818, off Petit Bois Island, Mississippi.

Notes: Bound from Madiera to New Orleans.

References: Coastal Environments (1976:#510)

MOUNT VERNON

Class: Sidewheel Steamboat

Tonnage: 148 (g)

Year Built: 1820

Place Built: Philadelphia, Pennsylvania

Home Port: Georgetown, D.C.

Disposition: Stranded, December 10, 1831, Pascagoula, Mississippi.

References: Lyt; Ber

ADVOCATE

Class: Sloop, fishing (smack)

Disposition: Scuttled as obstruction, January 7, 1862, Petit Bois Channel.

Notes: Captured by Union forces, December 1, 1861. Crew of 4. Captured sailing under Confederate papers.

References: Shomette; OR I(16):817; II(1):29

DELIGHT

Class: Schooner, fishing (smack)

Disposition: Scuttled as obstruction; January 7, 1862, Petit Bois Channel.

Notes: Captured by Union forces, December 9, 1861. Crew of 4. Captured sailing under Confederate papers.

References: Shomette; OR I(16):817

EXPRESS

Class: Sloop, fishing (smack)

Disposition: Scuttled as obstruction, January 7, 1862, Petit Bois Channel.

Notes: Captured by Union forces, December 9, 1861. Crew of 3. Captured sailing under Confederate papers.

References: Shomette; OR I(16):817

GARONNE

Class: Schooner, blockade runner
Tonnage: 14 (g)
Home Port: New Orleans, Louisiana
Disposition: Scuttled as obstruction, January 7, 1862, Petit Bois Channel.
Notes: Captured by Union forces, December 30, 1861. Subsequently stripped and used as a lighter. Crew of 4, captured.
References: Shomette; OR I(17):42, 86-87

OSCEOLA

Class: Sloop, fishing (smack)
Disposition: Scuttled as obstruction, January 7, 1862, Petit Bois Channel.
Notes: Captured by Union forces, December 9, 1861. Crew of 2. Captured sailing under Confederate papers.
References: Shomette; OR I(16):817

NATHANIEL TAYLOR

Class: Schooner
Disposition: Scuttled as obstruction, Spring, 1863, Petit Bois Channel.
Notes: Captured vessel.
References: Shomette; OR II(1):155

FANNY

Other Names: Formerly FOX (Br.); also called WASHINGTON POTTS
Class: Sidewheel steamboat, towboat [also variously used as a blockade runner (by C.S.) and as transport, mail boat (U.S.)].
Tonnage: 432 (g)
Home Port: New Orleans, Louisiana (prior to April 30, 1862)
Disposition: Run aground and burned to waterline, September 12, 1863 near Pascagoula, Mississippi.
Notes: As British steamer FOX, vessel was in Confederate service by April 7, 1862, shipping cotton to Havana from Confederate ports. Captured by Union forces while at anchor, April 30, 1862. As prize steamer, employed by U.S. forces as towboat, transport, and mail boat between April 30, 1862 and April 12, 1863. Recaptured by Confederates at New Orleans, April 12, 1863. Again used as blockade runner until sighted and pursued, September 12, 1863, by U.S. forces. Burned at Pascagoula to prevent recapture.
References: OR I(17):550-553; I(2):583-584; II(2):530; II(3):411, 452; Higginbotham (1967:37-38).

DE SOTO

Class: Sidewheel steamboat, ferry
Tonnage: 104 (g)
Year Built: 1859
Place Built: Wellsville, Ohio
Home Port: Vicksburg, Mississippi

DE SOTO (Continued)

Disposition: Exploded, December 9, 1865, Pascagoula, Mississippi.

Notes: 11 killed in accident.

References: Lyt; Ber

MARY E. CLARKE

91431

Class: Schooner, blue water

Tonnage: 120.97(g); 114.92(n)

Dimensions: 100.0' x 29.0' x 5.0'

Year Built: 1882

Place Built: Pensacola, Florida

Home Port: Galveston, Texas

Disposition: Went ashore in fog, February 4, 1885, 5 miles west of Horn Island Light.

Notes: Enroute Corpus Christi to Pascagoula. No newspaper account ca. this date in The Democrat News.

References: WPA; LMV (reported lost, 1885; not listed, 1886)

MASCOT

Class: Steam launch

Disposition: Sank, October 2, 1893, at Farnsworth's Wharf, Pascagoula River, during hurricane.

Notes: Not registered as commercial vessel.

References: Pascagoula Democrat Star (10-6-1893).

DOCTOR FRANKLIN

6491

Class: Schooner (charcoal)

Tonnage: 24.44 (g); 23.22 (n)

Dimensions: 32.7' x 19.0' x 4.1'

Year Built: 1857

Place Built: Jordan River, Mississippi

Home Port: New Orleans, Louisiana

Disposition: Capsized, October 2, 1893, near Bayou Chemise.

Notes: Lost a full load of charcoal.

References: Pascagoula Democrat Star (10-6-1893); LMV

WEBB

Class: Schooner (charcoal)

Disposition: Capsized, October 2, 1893, in Irving's Lake, during hurricane.

Notes: Lost a thousand or more barrels of charcoal upon capsizing.

Not commercially registered in 1893 (foreign?).

References: Pascagoula Democrat Star (10-6-1893)

TAYLOR

Class: Schooner

Disposition: Capsized, October 2, 1893, in West River at Gautier.

Notes: Not commercially registered in 1893.

References: Pascagoula Democrat Star (10-6-1893)

NAME UNDETERMINED (ANNIE?, see below)

Class: Sloop, quarantine

Disposition: Wrecked (sunk?), October 2, 1893, at Round Island, Mississippi Sound.

Notes: Probably the ANNIE, quarantine sloop [32' x 16' x 4.5'; 3.0 tons (g)] employed at North Chandeleur Island by the Marine Hospital Service. ANNIE is not registered in succeeding year, though registered for year of hurricane.

References: Pascagoula Democrat Star (10-6-1913); LMV

NAME UNDETERMINED

Class: Bark

Disposition: Dragged anchor and grounded, August 13, 1901, Pascagoula Bay, during hurricane.

Notes: No further notice. Probably refloated soon afterward.

References: Pascagoula Democrat-Star (8-16-1901)

HILJA (Russian)

Class: Bark

Disposition: Wrecked, May 20, 1904, on north shore of Horn Island adjacent to Horn Island Harbor.

Notes: Wreck allowed to stand beached. Owners required to remove fallen masts and yards, which were endangering navigation.

References: COE

ALICE

107617*

Class: Sternwheel steamboat, freight service registration

Tonnage: 90 (g); 54 (n)

Dimensions: 61.2' x 16.5' x 3.3'

Year Built: 1900

Place Built: Mobile, Alabama

Home Port: Gulfport, Mississippi

Disposition: Overturned and sank, ca. 1906 (1911?), at Belle Fountain (sic Bellefontaine?), in squall (S-Wixon).

Notes: See S-Wixon for photograph. Identity as 107617 is probable but unverified*. Event as reported is not corroborated by LMV, in which ALICE is removed from registration in fiscal 1912.

References: S-Wixon (1982:66); LMV

DAISY

157048

Class: Schooner

Tonnage: 33 (g); 23 (n)

Dimensions: 56.9' x 19.9' x 3.9'

Year Built: 1881

Place Built: Madisonville, Louisiana

Home Port: New Orleans, Louisiana

Disposition: Wrecked on beach, September 26, 1906, Horn Island, during hurricane.

Notes: While loading at dock (WPA). Five on board; one life lost. Crew of 4.

References: WPA; LMV

MARGRETTE B.

93312

Class: Schooner
Tonnage: 13 (g); 8 (n)
Dimensions: 38.2' x 14.8' x 3.1'
Year Built: 1902
Place Built: Pensacola, Florida
Home Port: Gulfport, Mississippi
Disposition: Stranded, September 27, 1906, off Point Aux Pines,
Mississippi Sound, during hurricane.
Notes: Crew of 1.
References: LMV

MAMIE M.

92321

Class: Gas screw, passenger service registration
Tonnage: 11 (g); 11 (n)
Dimensions: 40.6' x 14.0' x 4.0'
Year Built: 1891
Place Built: New Orleans, Louisiana
Home Port: Gulfport, Mississippi
Disposition: Burned, August 13, 1910, at Scranton (N. Pascagoula),
Mississippi.
Notes: None on board; no lives lost. Crew of 2.
References: LMV

EVANGELINE

204879

Class: Gas screw, oyster fishing vessel
Tonnage: 37 (g); 18 (n)
Dimensions: 67.8' x 20.6' x 4.9'
Year Built: 1905
Place Built: Biloxi, Mississippi
Home Port: Gulfport, Mississippi
Disposition: Burned, January 5, 1914, in Mississippi Sound. No more
precise location known.
Notes: Potentially within project area. Crew of 6.
References: LMV

HENRIETTA J. POWELL

95781

Class: Schooner, blue water
Tonnage: 316 (g); 244 (n)
Dimensions: 132.3' x 30.3' x 9.4'
Year Built: 1883
Place Built: Bath, Maine
Home Port: Gulfport, Mississippi
Disposition: Burned, October 26, 1914, en route from Pascagoula,
Mississippi to Havana, Cuba.
Notes: The Pascagoula Democrat Star missing this year. Crew of 6.
Slight probability of lying within project area. More likely lost
in Gulf waters.
References: Ber; LMV

JOE

Class: Schooner, fishing
Home Port: Pascagoula, Mississippi
Disposition: Report missing, October 1, 1915, after hurricane.
Notes: Belonged to Delmas fleet. Not commercially registered. Loss is not necessarily within project area.
References: The Pascagoula Democrat-Star (10-1-1915).

WILLY R.

Class: Schooner, fishing
Home Port: Pascagoula, Mississippi
Disposition: Reported missing, October 1, 1915, after hurricane.
Notes: Belonged to Delmas fleet. Not commercially registered. Loss is not necessarily within project area.
References: The Pascagoula Democrat-Star (10-1-1915).

J.B. RABEL

76359

Class: Barkentine
Tonnage: 450 (g); 389 (n)
Dimensions: 143.9' x 33.2' x 12.4'
Year Built: 1882
Place Built: Columbia Falls, Maine
Home Port: New York, New York
Disposition: Stranded, December 7, 1915, off Petit Bois Island.
Notes: Pascagoula Democrat Star issues missing. Crew of 7.
References: Ber; LMV

CHAMPION

127621

Class: Schooner
Tonnage: 41 (g); 30 (n)
Dimensions: 64.6' x 22.0' x 4.2'
Year Built: 1902
Place Built: Boggy Bayou, Florida
Home Port: Gulfport, Mississippi
Disposition: Stranded, July 5, 1916, Horn Island, Mississippi, during hurricane.
Notes: Four on board. No lives lost. Crew of 1.
References: LMV

DOROTHY

200633

Class: Schooner
Tonnage: 70 (g); 44 (n)
Dimensions: 79.0' x 21.3' x 8.6'
Year Built: 1904
Place Built: Essex, Massachusetts
Home Port: Pensacola, Florida
Disposition: Foundered, July 6, 1916, Petit Bois Island.
Notes: 7 killed. No mention in Pascagoula Democrat Star except for note in issue of 7-14-1916 that two schooners, unnamed, were unaccounted for. Crew of 9.
References: Ber; LMV

OTIS

155335

Class: Schooner, blue water
Tonnage: 292 (g); 238 (n)
Dimensions: 121.6' x 30.3' x 9.9'
Year Built: 1898
Place Built: Scranton, Mississippi
Home Port: Pittsburgh, Pennsylvania
Disposition: Foundered, September 21, 1917, after sailing from Pascagoula, Mississippi.
Notes: 7 killed. Note on tropical storm of this date in The Pascagoula Star reports "Little or no damage at Pascagoula" and "no shipping damaged". Presumably lost at sea, location unknown. Potentially within study area. Crew of 7. Never reported after date of sailing (LMV).
References: Ber; LMV

LEWIS BROTHERS (Br.)

Class: Schooner
Home Port: Halifax, Nova Scotia
Disposition: Burned and sunk, 1925, south of Horn Island Pass.
Notes: Not considered a navigation hazard by U.S. Coast Guard. Inspected Sept. 9, 1925 by U.S.C.G.C. TALLAPOOSA. Wreck was fast to the bottom, with two anchors down, capsized, keel above water. USHO #615. 30°09'30"N, 88°29'15"W.
References: G.S.A. (R.G. 77, S-1/1); Ber

ALBATROSS (#1)

Class: Smack, fishing
Home Port: Pascagoula, Mississippi.
Disposition: Reported missing, September 24, 1926, after hurricane of September 20.
Notes: Owned by Scranton Fish Company. Had departed with ONONDAGA September 15, for Chandeleur Islands. Crew of 7. No certainty of loss or of location.
References: The Chronicle Star (9-24-1926).

ALTHIA

93249

Other Name: Formerly (a) schooner MAXIE, (b) schooner JOSE LUIS, (Honduran)
Class: Auxiliary schooner, oil screw
Tonnage: 90 (g); 37 (n)
Dimensions: 93.1' x 23.0' x 5.8'
Year Built: 1902
Place Built: Freeport, Florida
Home Port: New Orleans, Louisiana
Disposition: Hit obstruction and sank, August 7, 1932, 8 miles southwest of Round Island. In 18 feet of water.
Notes: Coast Guard rescued crew. Some lighter articles of cargo salvaged. Operated by Coast Transportation Company. Newspaper reports probability of salvaging the vessel.
References: The Chronicle Star (8-12-1932); LMV

ALMA

107262

Class: Gas screw, fishing vessel
Tonnage: 14 (g); 11 (n)
Dimensions: 47.0' x 14.8' x 3.9'
Year Built: 1896
Place Built: Bayou La Batre, Alabama
Home Port: Mobile, Alabama
Disposition: Foundered, April 5, 1937, Petit Bois Island.
Notes: Three on board. No lives lost. Crew of 4. 24 hp.
References: LMV

MANHARTON (Br.)

Class: Oil screw, freighter
Disposition: Sunk, July 1938, Petit Bois Pass.
Notes: USHO #613. 120' forward section burned and beached by U.S. Coast Guard on north shore of Petit Bois Island. 60' stern section aground in Petit Bois Pass was to be disposed of by U.S. Corps of Engineers, but was apparently left in place.
References: Ber; G.S.A. (R.G. 77, S-1)

RELIANCE

213901

Class: Gas screw, fishing vessel, wooden
Tonnage: 24 (g); 16 (n)
Dimensions: 47.6' x 17.5' x 3.6'
Year Built: 1916
Place Built: Moorehead City, North Carolina
Home Port: Beaufort, North Carolina
Disposition: Foundered, 1941, off Pascagoula, Mississippi.
Notes: 50 hp.
References: LMV (1965)

ALPHONSE

107136

Class: Schooner barge, freight service registration
Tonnage: 25 (g); 15 (n)
Dimensions: 54.0' x 21.2' x 3.9'
Year Built: 1894
Place Built: Moneau, Mississippi
Home Port: Gulfport, Mississippi
Disposition: Foundered, August 28, 1942, in Mississippi Sound. Location unknown.
Notes: Not necessarily within project area. Crew of 3.
References: LMV

CAPT. WES ROBINSON

240413

Class: Oil screw, fishing vessel
Tonnage: 81 (g); 36 (n)
Dimensions: 65.0' x 22.6' x 7.1'
Year Built: 1941

CAPT. WES ROBINSON (Continued)

Place Built: Morgan City, Louisiana

Home Port: New Orleans, Louisiana

Disposition: Burned, September 1946, Pascagoula River, Pascagoula, Mississippi.

Notes: Crew of 8. 170 hp.

References: Ber; LMV

SIS

232960

Class: Oil screw, yacht, wooden vessel

Tonnage: 18 (g); 12 (n)

Dimensions: 41.8' x 12.0' x 5.6'

Year Built: 1934

Place Built: Brooklyn, New York

Home Port: New Orleans, Louisiana

Disposition: Foundered, 1948, north of Petit Bois Pass off the coast near Pascagoula, Mississippi.

Notes: Crew of 1. 190 hp.

References: LMV

A. OLIVEIRA

232655

Class: Oil screw, fishing vessel, wooden

Tonnage: 15 (g); 6 (n)

Dimensions: 39.0' x 13.5' x 4.6'

Year Built: 1930

Place Built: Fernandina, Florida

Home Port: Brunswick, Georgia

Disposition: Foundered, October 19, 1952, north of west point of Petit Bois Island.

Notes: Crew of 2. 60 hp.

References: LMV

ALBATROSS (#2)

264262

Class: Gas screw

Tonnage: 13 (g)

Year Built: 1906

Disposition: Stranded, May, 1953, about one mile from east end of Horn Island, Mississippi.

Notes: Fuller documentation unavailable in LMV.

References: LMV

MARY MARGARET

228663

Class: Oil screw, fishing vessel, wooden

Tonnage: 36 (g); 28 (n)

Dimensions: 64.4' x 18.6' x 4.5'

Year Built: 1929

Place Built: Biloxi, Mississippi

Home Port: Biloxi, Mississippi

Disposition: Stranded, October 12, 1955, approximately 1/2 mile northwest of Horn Island, Mississippi.

MARY MARGARET (Continued)

Notes: 165 hp.

References: LMV

JOE LECKICH, JR.

250969

Class: Oil screw, fishing vessel

Tonnage: 29 (g); 23 (n)

Dimensions: 54.1' x 15.8' x 5.1'

Year Built: 1946

Place Built: Biloxi, Mississippi

Home Port: Biloxi, Mississippi

Disposition: Stranded, February 1, 1957, in Mississippi Sound, west end of Petit Bois Island, Mississippi.

Notes: 165 hp.

References: LMV

HORNET

272354

Class: Oil screw, fishing vessel, wooden

Tonnage: 38 (g); 15 (n)

Dimensions: 49.4' x 15.3' x 6.8'

Year Built: 1956

Place Built: Fernandina Beach, Florida

Home Port: Fernandina Beach, Florida

Disposition: Burned, January 9, 1958, near Petit Bois Island, 10 miles south of Pascagoula, Mississippi

Notes: 330 hp.

References: LMV

MACARTHUR

241672

Class: Oil screw, fishing vessel, wooden

Tonnage: 15 (g); 10 (n)

Dimensions: 39.1' x 12.6' x 3.7'

Year Built: 1942

Place Built: Chauvin, Louisiana

Home Port: Biloxi, Mississippi

Disposition: Collided with unknown object, January 1, 1960, 2 miles west of Dauphin Island, Alabama.

Notes: 30 hp.

References: LMV

LADY LUCK

248689

Class: Oil screw, fishing vessel, wooden

Tonnage: 17 (g); 12 (n)

Dimensions: 39.1' x 12.1' x 5.2'

Year Built: 1945

Place Built: Port Arthur, Texas

Home Port: Biloxi, Mississippi

Disposition: Burned, January 4, 1960, in Pascagoula Bay, approximately 400 yards NNW of Round Island Spit Light.

Notes: 110 hp.

References: LMV

LITTLE CHEBEAGUE

232821

Other Names: formerly HERMAN S.
Class: Oil screw, fishing vessel, wooden
Tonnage: 27 (g); 16 (n)
Dimensions: 47.5' x 14.4' 5.4'
Year Built: 1933
Place Built: Biloxi, Mississippi
Home Port: Biloxi, Mississippi
Disposition: Burned, September 24, 1962, off Horn Island, Mississippi.
Notes: 165 hp.
References: LMV

AIR GANNET

259057

Other Names: formerly (a) SC 659 (U.S. Navy); (b) WAVR 423 (U.S.C.G.)
Class: Oil screw, fishing vessel, wooden
Year Built: 1942
Disposition: Burned, 1963, in Krebs Lake, Pascagoula, Mississippi.
References: LMV

SEA HORSE

255979

Other Names: formerly YTL 305 (U.S. Navy)
Class: Oil screw, fishing vessel, wooden
Tonnage: 46 (g); 19 (n)
Dimensions: 57.1' x 17.6' x 6.4'
Year Built: 1943
Place Built: Holland, Michigan
Home Port: Mobile, Alabama
Disposition: Lost, February 3, 1963, within 30 mile radius of Horn Island Pass, Mississippi. Cause unknown.
Notes: 300 hp.
References: LMV

DEWEY

231974

Class: Oil screw (formerly gas), fishing vessel, wooden
Tonnage: 7 (g); 5 (n)
Dimensions: 33.9' x 10.8' x 3.8'
Year Built: 1918
Place Built: Mobile, Alabama
Home Port: Apalachicola, Florida
Disposition: Foundered, date unknown, at Pascagoula, Mississippi.
Notes: 87 hp. Registration spans 1933-1964 (LMV). Oyster boat converted from gas to diesel.
References: LMV

FEBRUARY

268755

Class: Oil screw, fishing vessel, wooden
Tonnage: 35 (g); 14 (n)
Dimensions: 48.0' x 15.5' x 6.9'

FEBRUARY (Continued)

Year Built: 1954
Place Built: St. Augustine, Florida
Home Port: Tampa, Florida
Disposition: Burned, July 6, 1964, at Pascagoula, Mississippi.
Notes: 110 hp.
References: LMV

HELEN S.

274327

Class: Oil screw, fishing vessel, wooden
Tonnage: 104 (g); 52 (n)
Dimensions: 70.7' x 21.6' x 9.5'
Year Built: 1957
Place Built: Thunderbolt, Georgia
Home Port: Tampa, Florida
Disposition: Stranded, November 27, 1965, at Petit Bois Island, Alabama.
Notes: 270 hp.
References: LMV

DANLYN

287422

Class: Oil screw, fishing vessel, wooden
Tonnage: 54 (g); 37 (n)
Dimensions: 55.4' x 18.4' x 7.8'
Year Built: 1962
Place Built: Magnolia Springs, Alabama
Home Port: Mobile, Alabama
Disposition: Burned, September 5, 1966, south of Horn Island in the Gulf of Mexico.
Notes: 165 hp.
References: LMV

BEA JOYCE

289092

Other Names: formerly CAPT. SAPALO
Class: Oil screw, fishing vessel, wooden
Tonnage: 8 (g); 5 (n)
Dimensions: 33.7' x 9.9' x 2.7'
Year Built: 1926
Place Built: Montegut, Louisiana
Home Port: Galveston, Texas
Disposition: Foundered, December, 1966, at the dock, Pascagoula, Mississippi.
Notes: 115 hp.
References: LMV

ALAN B.

263984

Other Names: formerly CAPT. CHARLIE
Class: Oil screw, towboat, steel vessel
Tonnage: 28 (g); 19 (n)

ALAN B. (Continued)

Dimensions: 41.6' x 14.0' x 6.2'
Year Built: 1952
Place Built: Houston, Texas
Home Port: Houston, Texas
Disposition: Foundered, January 14, 1967, at Standard Oil dock, Pascagoula, Mississippi.
Notes: 500 hp.
References: LMV

LIVELY LADY

250228

Class: Gas screw, fishing vessel, wooden
Tonnage: 7 (g); 5 (n)
Dimensions: 31.7' x 10.0' x 2.7'
Year Built: 1946
Place Built: Morehead City, North Carolina
Home Port: Pascagoula, Mississippi
Disposition: Foundered, July 20, 1968, off Round Island on Middle Ground, 1 mile south of Pascagoula, Mississippi.
Notes: 40 hp.
References: LMV

STARMIST

264290

Class: Oil screw, fishing vessel, wooden
Tonnage: 63 (g); 28 (n)
Dimensions: 58.7' x 18.5' x 8.2'
Year Built: 1952
Place Built: St. Augustine, Florida
Home Port: Mobile, Alabama
Disposition: Collided, August 27, 1969, with the vessel PATTI ANN at 30°09'N, 88°34'W.
Notes: 120 hp.
References: LMV

GULF TRADER

289513

Class: Oil screw, fishing vessel, wooden
Tonnage: 24 (g); 17 (n)
Dimensions: 53.4' x 13.7' x 5.2'
Year Built: 1962
Place Built: Pensacola, Florida
Home Port: Pensacola, Florida
Disposition: Foundered, 1969, at Quinn's Fishery north of Hwy 90 bridge, Pascagoula, Mississippi.
Notes: 110 hp.
References: LMV

KAY ANN

254922

Class: Oil screw, fishing vessel, wooden
Tonnage: 27 (g); 21 (n)

KAY ANN (Continued)

Dimensions: 52.5' x 16.0' x 4.4'
Year Built: 1948
Place Built: Biloxi, Mississippi
Home Port: Mobile, Alabama
Disposition: Collided, May 14, 1970, with oil screw FORNEY J and barge MUTUAL NO. 2, 30°15'N, 88°25'W, Mississippi Sound.
Notes: 85 hp.
References: LMV

FREJABAR IV

241037

Other Names: formerly BETTA
Class: Gas screw, yacht, wooden
Tonnage: 9 (g); 9 (n)
Dimensions: 29.9' x 11.2' x 4.1'
Year Built: 1940
Place Built: Tampa, Florida
Home Port: Miami, Florida
Disposition: Foundered, August 1, 1972, at Petit Bois Island in Gulf of Mexico off Pascagoula, Mississippi.
Notes: 95 hp.
References: LMV

ELLA

268591

Class: Oil screw, towboat, steel vessel
Tonnage: 55 (g); 40 (n)
Dimensions: 50.2' x 22.0' x 4.8'
Home Port: Mobile, Alabama
Disposition: Foundered, September 11, 1972, at Petit Bois Pass, Mississippi Sound, 30°19'N, 88°20'W.
Notes: 670 hp.
References: LMV

LIBERTY

502340

Class: Oil screw (formerly gas), fishing vessel, wooden
Tonnage: 15 (g); 12 (n)
Dimensions: 33.3' x 12.1' x 3.9'
Year Built: 1929
Place Built: Oak, Alabama
Home Port: Mobile, Alabama
Disposition: Lost, January 2, 1974, in Pascagoula River at Pascagoula, Mississippi.
Notes: 55 hp.
References: LMV

AGS 342

509817

Class: Barge, freight registration, steel vessel
Tonnage: 885 (g); 855 (n)

AGS 342 (Continued)

Dimensions: 195.1' x 35.1' x 9.7'
Year Built: 1967
Place Built: Neville Island, Pennsylvania
Home Port: Minneapolis, Minnesota
Disposition: Stranded, January, 15, 1975, near Pascagoula, Mississippi.
References: LMV

LADY DAISY

545638

Class: Oil screw, fishing vessel, wooden
Tonnage: 85 (g); 56 (n)
Dimensions: 71.4' x 21.0' x 10.4'
Year Built: 1973
Place Built: Bayou La Batre, Alabama
Home Port: Mobile, Alabama
Disposition: Burned, September 16, 1975, on the west end of Petit Bois Island.
Notes: 350 hp.
References: LMV

NAME UNDETERMINED

Class: Barge
Disposition: Foundered, March 24, 1977, Graveline Bayou, Mississippi Sound, at 30°21'51"N, 88°40'27"W.
References: HN

KAREN LEE

274092

Class: Oil screw, fishing vessel, wooden
Tonnage: 52 (g); 35 (n)
Dimensions: 59.8' x 18.8' x 7.9'
Year Built: 1957
Place Built: Ocean Springs, Mississippi
Home Port: Pensacola, Florida
Disposition: Foundered, June 14, 1977, 200 yards west of Buoy 25, Pascagoula Ship Channel.
Notes: Identification as 274092 is unverified.
References: HN; LMV

ALMA B.

256039

Class: Oil screw, fishing vessel, wooden
Tonnage: 15 (g); 10 (n)
Dimensions: 39.2' x 15.0' x 4.3'
Year Built: 1948
Place Built: Pascagoula, Mississippi
Home Port: Biloxi, Mississippi
Disposition: Foundered, May 15, 1978, 1 1/2 miles east of Horn Island Pass in Mississippi Sound.
References: LMV

NAME UNDETERMINED

Class: Pleasure craft

Dimensions: 20' (length)

Disposition: Foundered, August 5, 1978, at 30°20'30"N, 88°35'00"W.

References: HN

SHARON KAY

Class: Oil screw, fishing vessel

Disposition: Foundered, July 3, 1980, in Pascagoula Channel at 30°18'36"N, 88°33'00"W.

Notes: There are four vessels, all with the name SHARON KAY[E], registered on the northern Gulf Coast for 1979. All are oil screw fishing vessels; two built in Biloxi and two built in Bayou La Batre. This loss is undoubtedly one of the four (234926, 254217, 561109, 510496).

References: HN

NAME UNDETERMINED

Class: Pleasure craft

Disposition: Foundered, April 21, 1982, south side of mud lumps, Pascagoula Channel, at 30°19'36"N, 88°34'00"W.

Notes: Dragging anchor

References: HN

NAME UNDETERMINED

Class: Pleasure craft

Disposition: Foundered, June 30, 1982, in Mississippi Sound, at 30°19'48"N, 88°33'12"W.

Notes: Could not be relocated by U.S.C.G.

References: HN

Table 4. List of Wrecked Vessels Excluded from Shipwreck Inventory.

Name	Vessel Type	Reason for Exclusion	Date of Loss
A. DEAN HEASLEY	Towboat	Salvaged	1982
AL-7549-AB	Fishing vessel	Salvaged	1982
AMELIA	Charcoal schooner	Blown ashore	1893
BON SECOUR	Gas screw F/V	Lost south of study area	1955
CAPTAIN JOE	Oil screw F/V	Lost south of study area	1968
CAPT. FRITZ	Sternwheel steamboat	Lost north of study area (?)	1930
CHEBEAGUE	Oil screw F/V	Lost south of study area	1957
COMET	Auxiliary schooner F/V	Salvaged	1917
DOVE	Unknown	Blown ashore	1893
EMMA	Brig	Blown ashore	1893
FAIRWIND	Schooner	Blown ashore	1893
FRANKLIN	Charcoal schooner	Blown ashore	1893
FRED S.	Schooner	Blown ashore	1893
GRIFFIN	Blue water schooner	Re-floated, repaired	1893
INDEPENDENCE	Schooner	Re-floated (?)	1920
ISABEL L.	Tugboat, steam	Re-floated, repaired (?)	1893
JOHN DELESTRO	Pilot boat	Lost north of study area	1896
JOHN SCOTT	Gas screw F/V	Blown ashore	1893
KIMBERLY L.	Motor vessel	Lost north of study area	1956
LILLIE MACK	Oil screw F/V	Salvaged	1982
LITTLE DARLIN	Fishing vessel	Lost south of study area	1966
LITTLE MARK	Oil screw F/V	Salvaged	1981
MALRII O	Oil screw F/V	Lost south of study area	1965
MARGARET LEINHARD	Oil screw F/V	Lost south of study area	1966
MARIE ROSE	Steam screw	Re-floated, repaired	1884
	Ketch P/C	Re-floated, repaired	1979

Table 4. List of Wrecked Vessels Excluded from Shipwreck Inventory (Continued).

Name	Vessel Type	Reason for Exclusion	Date of Loss
MARY ANN	Pleasure craft	Salvaged	1981
MARY C. MARINER	Brig	Blown ashore	1893
MARY THERESA	Schooner	Blown ashore	1893
MATTIE GEORGE	Pilot boat	Wrecked ashore	1893
NAME UNDETERMINED	Pleasure craft	Salvaged	1981
NEW VENICE	Schooner	Righted, repaired	1884
NO. 28	Barge	Salvaged (C. of E.)	ca. 1916
PALOS	Schooner	Blown ashore	1893
PHEOBA	Bark (Nor.)	Blown ashore	1893
RAJUN CAJUN	Pleasure craft	Salvaged	1982
ROBERT H. RATHBURN	Schooner	Removed (C. of E.)	1898
RUBY-O	Oil screw, towboat	Lost west of study area	1953
SADIE L.	Steam screw	Re-floated, repaired	1896
SARAH	Steamboat (?)	Repaired	1867
SEA BEE	Fishing vessel	Salvaged	1980
STELLA MARIS	Freighter (Peru)	Raised, repaired	1969
SWAMP ANGEL	Pleasure craft	Salvaged	1982
TWO LADIES	Fishing vessel	Salvaged	1980
WASP	Steam screw, towboat	Lost north of study area	1910
WATERHOUSE (U.S.S.)	Liberty ship	Sunk south of study area	1975
WM. GRIFFIN	Schooner	Blown ashore	1893

CHAPTER 7

TERRESTRIAL SURVEY RESULTS

Introduction

The survey of proposed land disposal areas (Figure 3) was undertaken between March 18-25, 1983 and April 21-25, 1983. The survey was conducted by Carlos Solis and Joni Keyser. The scope of work required that a 15 percent sample of each area be surveyed and that all previously recorded sites be field checked and assessed. A summary of recommendations for the terrestrial sites encountered are presented in Chapter 11.

Survey Methods and Techniques

Locational Aspects. All areas (Figure 3) were plotted on USGS quadrangles: Pascagoula, Grand Bay SW and Kreole; Jackson County Soil maps, and a City of Pascagoula map. Orientation within survey areas was accomplished through the use of those maps and a Brunton compass.

Sampling Scheme. Survey transects 50 m wide were utilized to cover at least 15 percent of each survey area with the exception of areas C and GG, where a 30 percent sample of each was obtained. The length of the transect was determined by the configuration of each area. In each case, however, sufficient transects were surveyed to meet the sample required. The use of this sampling scheme insured that all environmental variables present within each area were covered. Prior to the field work, examination of available environmental data such as quadrangle and soil maps were made and the placement of transects determined. This ensured that all variables present were represented in the transects.

Survey Techniques. Each transect was walked by two individuals spaced 25 m apart. Within each transect all visible ground surfaces were observed and shovel tests were excavated at 30 m intervals. These tests consisted of excavating at least a 30 cm by 30 cm unit, with the depth depending on the nature of the soils present. The tests were excavated to depths considered to not have probabilities of containing archaeological deposits and in most instances extended well into the water table. Vertical control was maintained using observable soil strata. All excavated soils were screened through 1/4 in mesh portable screens, unless soil consistency proved too time consuming. The problem of screening mucky soil was discussed with the USCOE monitor and a viable option of hand troweling the excavated soils was substituted.

In addition to shovel testing, the banks of numerous drainage canals and associated spoil piles were examined. In areas where these disturbances occurred, they afforded more exposed areas for visual inspection than did the shovel tests. The profiles and spoil piles were inspected whenever possible.

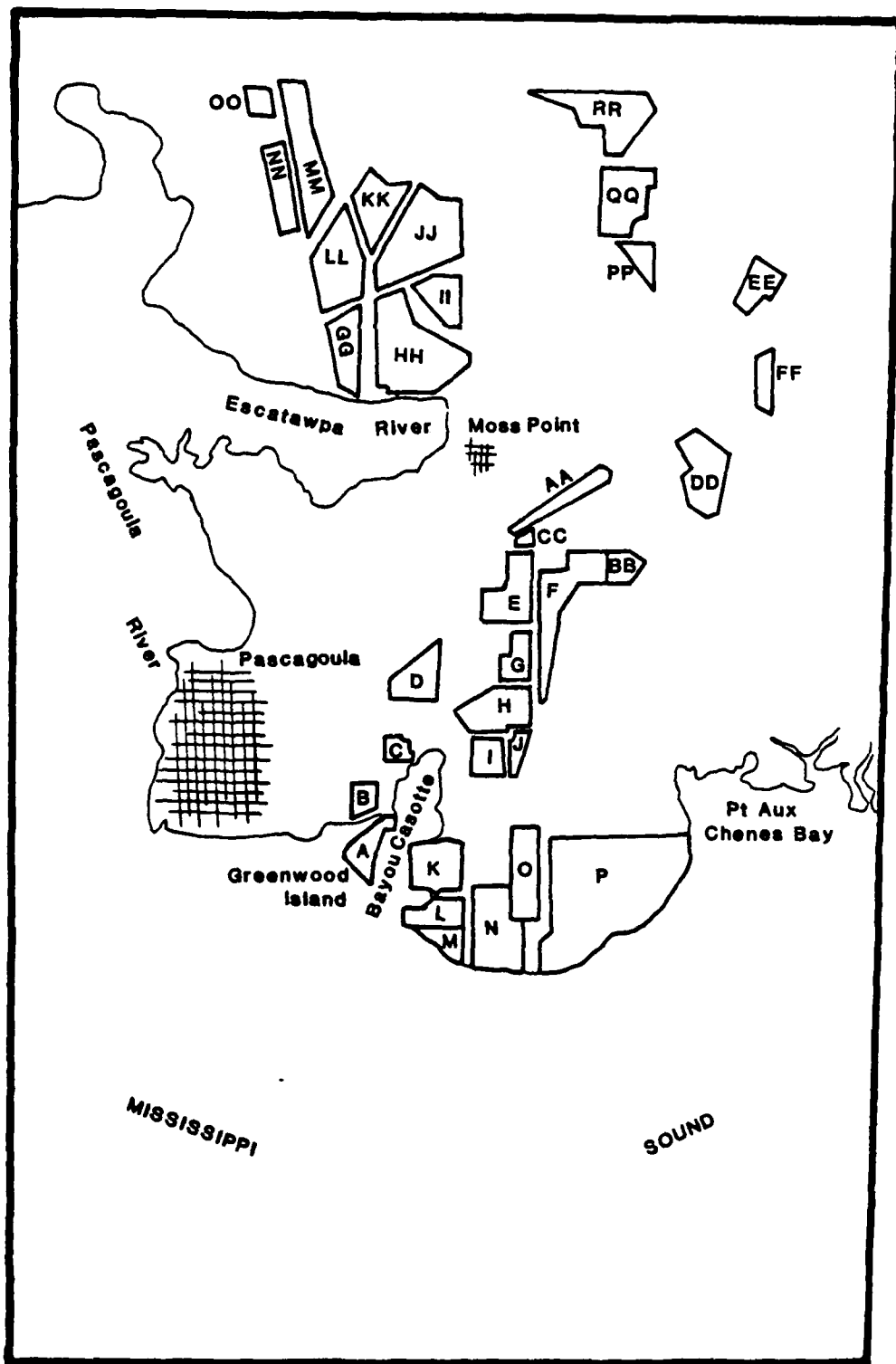


Figure 3. Upland Disposal Sites.

Area A

The proposed location of the Greenwood Island disposal area (Area A) is composed of mixed terrain, over sixty percent of which has been altered. A spoil basin has been constructed on the island and the northwest portions contain approximately 10 ft to 15 ft of recent overburden associated with the former location of a municipal landfill. Also, a sewage treatment facility may have been located in this area. Presently the northeastern portion of Greenwood Island contains the municipal dog pound. Shovel tests during this survey and previous investigations (Solis and Walling 1982) demonstrate that substantial amounts of dredged materials have also been deposited on the southern part of the island. The rest of the area is characterized by a level salt water marsh, with two oak hummocks located on the east central portion. These two oak hummocks, separated by a small stagnant bayou, both contain cultural deposits, designated as Sites 22Ja516 and 22Ja618 (Plates 1 and 2). These site numbers were assigned primarily to the prehistoric components, but a historic military component occupies an area which encompasses both locations as well as other sections of the island. Other portions of the Greenwood Island military complex, in particular the battalion compound, are suspected of being located under the dike wall and the spoil basin. At the time of this survey the interior of the spoil area was flooded and could not be tested. During a previous survey (Solis and Walling 1982) the spoil basin was not considered part of the survey universe, but observations made then suggest that evidence of this complex has been destroyed. It would be difficult to detect these sites by shovel testing given the architectural nature of the complex, i.e., buildings made of wood and raised on stilts.

Area B

Area B has been extensively developed, with approximately 200 suburban houses occupying the proposed spoil area. Although these structures are recent, a sample were photographed for future reference. It should be noted that none of the structures are considered eligible for the National Register of Historic Places.

Area C

Area C is heavily vegetated with mixed flora producing a very dense undergrowth. The terrain is generally swampy with Bayou Casotte bordering the northeastern extremity. One oak hummock was noted to be present. Thirty percent of this area was surveyed.

Area D

Access to Area D was denied. Most of the area is covered in forest, but has undergone some recent land alteration in the form of a new apartment complex.

Area E

The major portion of Area E is composed of marsh land. A number of drainage canals transect the area. One oak hummock was observed. Parts of the area have been recently clear cut, allowing good visibility. Twenty percent of Area E was investigated.



Plate 1. Eastern shore of Site 22JA516.



Site 22JA618, view to east.

One site (22JE-1) was located and recorded. Four domestic structures are located on the southwestern corner of the proposed area. None of these modern structures are considered eligible to the National Register. Fifteen percent of Area E was surveyed.

Area F

The terrain associated with Area F consists of drained marsh land. Canals and one small road are present within this area. A seventeen percent sample was surveyed and no cultural resources were encountered.

Area G

Area G is composed almost exclusively of marsh. Numerous drainage canals are present in this area. A 15 percent sample of the area was surveyed. No cultural resources were recorded.

Area H

Area H is composed of both unaltered and drained marsh land. Vegetation consists primarily of pines and dense undergrowth. At the time of survey much of the area contained standing water. No cultural resources were located in this area. A sixteen percent sample was obtained.

Area I

Access to Area I was denied, but it was noted that the property has been developed for industrial purposes. Portions of the area are used as a hazardous waste disposal site and a bacteria farm is also located in the vicinity.

Area J

Area J contains swamps vegetated by pines. One large oak hummock is preserved in the southeastern part of the area. The oak hummock was extensively shovel tested, as these floral forms are often associated with prehistoric occupations. An eighteen percent sample was surveyed, but no cultural resources were located.

Area K

Access to Area K was restricted due to recent land alteration, the northern half of the area containing Chevron's "Tailings Pond". The southern portion contains large areas which have been drained, while other areas contain pumped fill. Previously recorded Site 22Ja523 is located in the area for which access was denied.

Area L

Area L consists of fill materials with only small patches remaining unaltered. A twenty percent sample of the area was surveyed and no cultural resources were located.

Area M

Area M is composed almost entirely of fill materials. However, the entire beach perimeter and terrain patches containing no fill were surveyed. No cultural resources were located within the nineteen percent of the area covered.

Area N

This area is composed of coastal beaches and salt water marshes. The eastern extremity contains a large drainage canal. Two small bayous, Priest and Rosa, are located in the area. Close scrutiny of the beaches for previously recorded Site 22Ja592 failed to produce any evidence of its current existence. According to local informants, wave action from Hurricanes Camille and Fredrick completely destroyed the site. A one hundred percent sample of the beach and sixteen percent of the marsh area were surveyed.

Area O

The northern three-fourths of Area O was restricted from inspection, as it is part of Chevron's industrial complex. The southern fourth contains salt water marshes. Site 22Ja522 was previously recorded within this area, but could not be relocated. A twenty-five percent sample of the southern fourth of the area was surveyed. No cultural resources were located.

Area P

Area P is composed of coastal beaches and salt water marshes. The northwest corner of this proposed area contains sediment ponds of Chevron USA, Inc. All of the beach area and fifteen percent of the marsh land were surveyed. Site 22Ja537 was found to have been destroyed by wave action.

Area AA

Area AA is composed of drained swamp land with vegetation consisting of pines and a dense undergrowth. A fifteen percent sample was obtained and no cultural resources were located.

Area BB

Area BB consists almost exclusively of wetlands. Vegetation is primarily pines and dense undergrowth. A fifteen percent sample was surveyed; no cultural resources were located.

Area CC

Area CC consists of wetlands with pine vegetation. Numerous canals were noted throughout the area. A fifteen percent sample was surveyed, with no location of cultural materials.

Area DD

Area DD is composed of wetlands, with the vegetation consisting of young pines. According to local informants the area was clear cut approximately ten years ago. A large drainage canal as well as numerous smaller feeder canals are present within this area. A fifteen percent sample was obtained; no cultural resources were located.

Area EE

Area EE is swampy and contains numerous recent drainage canals. Approximately 1.5 km of the canal banks and spoil piles were inspected, resulting in about twenty percent coverage of the area. No cultural resources were located.

Area FF

Area FF is extremely swampy and covered with pine vegetation and associated dense undergrowth. A fifteen percent sample was obtained. No cultural resources were located.

Areas GG, HH, II, JJ, KK, LL, MM, NN, and OO

These areas are all clustered in the same vicinity. All areas are located in swamp lands which are drained by numerous canals. Piney woods are the dominant vegetation present. A fifteen percent sample was obtained of each area, with the exception of Area GG, which had thirty-five percent coverage.

Area MM produced the remains of a domestic structure (22JaMM-1). One area located along the banks of Four Mile Creek which was considered particularly conducive for the occurrence of prehistoric deposits was closely shovel tested, but no cultural resources were encountered. This area was previously surveyed by Greenwell(1981). The one "possible site" reported by Greenwell was extensively shovel tested, but no indications of a cultural deposit were encountered.

Areas PP, QQ, and RR

Areas PP, QQ, and RR are located in close proximity to each other. They occupy wetlands supporting vegetation consisting primarily of pines and dense undergrowth. Numerous drainage canals occur in the area. A fifteen percent sample of each area was obtained, but no cultural resources were encountered.

Soils

A total of 16 soil types were present within the proposed disposal areas (Table 5). For the most part, these soils were found to possess properties which are considered marginal to unsuitable as settlement locations. The following is a characterization of the soil types present within the proposed areas (USDA 1964).

- (1) Bayboro Silt Loam. These are poorly drained soils of the coastal flatwoods. The surface layer is 3 to 9 in thick, consisting of a black sandy loam. The subsoil is clayey and slowly permeable. It is sticky when wet, and is hard and cracked when dry.
- (2) Bowie Loam. These are moderately well drained soils. The surface layer (0-8 cm) ranges from sandy loam to loam. This is underlain by silty clay to clay with a blocky structure.
- (3) Coastal Beach. This soil type consists of relatively clean white sands, occurring as narrow strips along the beaches of Mississippi Sound.
- (4) Coxville Silt Loam. These are poorly drained soils of the coastal flatwoods. They possess a surface layer 5 to 7 in thick of black to very dark gray sandy loam or silt loam. The surface layer is underlain by clays which are slowly permeable and plastic.
- (5) Dunbar Loam. These are poorly drained soils of the coastal flatwoods, possessing a surface layer approximately 5 in thick ranging from silt loam to very fine sandy loam. The surface layer is underlain by brownish clay loam, very plastic in nature and having a blocky structure.
- (6) Goldsboro Loam. These are nearly level, moderately well drained soils formed in medium textured Coastal Plain material. The approximately 9 in thick surface layer is very dark gray loam, underlain by mottled friable loam.
- (7) Klej Loamy Sand. These are coarse textured soils which are moderately well drained. The surface layer is approximately 8 in thick, composed of friable loamy sand. This layer is also underlain by friable loamy sand.
- (8) Lynchburg Very Fine Sandy Loam. These are somewhat poorly drained soils possessing a surface layer of very dark grayish-brown very fine sandy loam. The subsoil is pale yellow to light yellowish brown very fine sandy loam.
- (9) Plummer Sandy Loam. These are poorly drained sandy soils having a surface layer 2 to 9 in thick of dark gray friable loamy sand. This is underlain by gray loamy sand. These soils are considered excessively wet.
- (10) Plummer Loamy Sand, Dark Surface. The surface layer of this soil is composed of a black to mottled black loose loamy sand, 5 to 8 in thick. The surface layer is underlain by mottled loose loamy sand.
- (11) Made Land. This land type consists of areas located along beaches and marshes that have been diked and then filled by pumping with silt, sand, and mud.
- (12) Pheba Loam. This is a poorly drained soil with a fragipan formed in sandy loam Coastal Plain material. The surface layer of this soil is composed of very dark gray friable loam underlain by a compact, brittle fragipan.

(13) Rains Loam, Dark Surface. This is a poorly drained soil of the coastal flatwoods. The surface layer consists of a dark gray friable loam. The subsurface layer consists of friable loam and a gray clay loam. Water moves slowly through this soil. Surface drainage is poor due to the almost level surfaces usually present.

(14) Scranton Loamy Sand. This is a somewhat poorly drained soil formed in sandy Coastal Plain material. The surface layer is black to very dark loamy sand. The subsoil is composed of gray, friable, sandy loam.

(15) Swamp. This land type consists of level to gently sloping, poorly drained areas. The soil is composed of coarse to medium textured materials that are highly organic and strongly acid. Water stands on the surface most of the year when rainfall is average.

(16) Tidal Marsh. This land type occurs along the coast. It is covered by and adjoins salt or brackish water. The soil material is composed of brown, partly decomposed marsh grass over mineral soil material.

Table 5. Soil Types Present in Terrestrial Survey Areas.

Soil Type	Present in Area(s)
Bayboro Silt Loam	RR, QQ, PP, EE, FF, AA, E
Bowie Loam	PP
Coastal Beach	A
Coxville Silt Loam	PP, EE, FF, CC
Dunbar Loam	QQ, PP, EE, FF
Goldsboro Loam	QQ
Klej Loamy Sand	RR, QQ, H
Lynchburg Very Fine Sandy Loam	RR, QQ, PP, JJ, EE, H
Plummer Sandy Loam	E, A, B, D, N
Plummer Loamy Sand, Dark Surface	CC, AA, F, BB, H, A
Made Land	E, A, K, M, L
Pheba Loam	DD
Rains Loam, Dark Surface	RR, QQ, PP, JJ, EE, FF, E, H, N
Scranton Loamy Sand	QQ, E, F, H, B, O
Swamp	RR, QQ, JJ
Tidal Marsh	A, P, N

Site 22Ja516
("Big Greenwood Island" Site)

Project Area: Survey Area A.

Elevation: 0-3 ft. AMSL

Environmental Setting: Site 22Ja516 is located on a small topographic rise in the southeastern corner of Greenwood Island. The site is bordered to the east by Bayou Casotte and bordered to the south, west, and north by a low tidal marsh. Vegetation on the site area consists of large oak trees, palmettos, and a dense growth of thorny species. The soil type is a poorly drained sandy soil of the coastal lowlands.

Site Description: Site 22Ja516 is a buried cultural deposit containing well preserved floral, faunal, and human remains and intact cultural features. These cultural deposits occur intact despite serious looting of the site by pothunters. The site area, as determined by testing in a 1982 testing project (Solis and Walling 1982) measures 75 m east-west and 100 m north-south. The soil of the area is a friable, gray loamy sand underlain by a yellowish brown sandy loam. The artifact bearing matrix is concentrated 35 cm to 45 cm below surface. This midden is a dark brown to black compacted sand containing amounts of marine shell varying from light to very concentrated. The cultural stratum is confined to the knoll and the east beach bordering Bayou Casotte, where cultural materials are exposed on the surface. One feature was located in the midden area during the previous testing program. This feature extended 100 cm below the surface into the water table. Historic materials also contained in the matrix indicate that the feature dates to the mid-nineteenth century.

Soil Type: Plummer loamy sand.

Nearest Water Source: The site area is bordered to the east by Bayou Casotte and in all other directions by a tidal marsh.

Current Land Use: The site is not currently utilized for commercial purposes.

Investigation Procedure: Site 22Ja516 was previously recorded in the Mississippi State Department of Archives and History archaeological site files.

The site first came to public attention with dredging of Bayou Casotte channel, which impacted the site on the eastern end. Erosion during the 1960s exposed approximately "two dozen" burials, extensively looted at that time by collectors. "Salvage" excavations (about 1970) were conducted by Dale Greenwell (n.d.:13-14), who recovered six undisturbed aboriginal burials. At about the same time (about 1971) Mark Williams, with Mississippi Gulf Coast chapter of Mississippi Archaeological Association, conducted stratigraphic excavations in selected undisturbed areas, revealing a stratigraphic sequence from Poverty Point through historic. These data are not yet published.

Because of the extensive Poverty Point component, the site was brought to the attention of Clarence H. Webb in 1975, who subsequently incorporated certain data into his synthesis of Poverty Point culture (Webb 1977, 1982:8, 71). Site 22Ja516 has been extensively looted through the 1970s up to the present, especially since the additional discovery that the site is a source of whole nineteenth century bottles. One local informant estimates that hundreds of whole bottles have been excavated at the site.

In 1979, an amateur reported finding a coffin on the eastern margin of the site. With the assistance of Samuel McGahey, Chief Archaeologist for the Mississippi Department of Archives and History, two coffins were excavated. Analysis revealed that they were Caucasian, of the Mexican War era (Geiger 1979, Fisher 1979, Wright 1979). This led to initial research linking the coffins to Camp Jefferson Davis/ Camp Twiggs of the Mexican War period.

Excavation of four 50 cm by 50 cm test units was conducted in 1982 by OAR personnel (Solis and Walling 1982). A 1982 report submitted to the Jackson County Port Authority was largely drawn upon for this site description.

The site was reexamined by OSM personnel in 1983. The eastern beach was surface collected. The site had been severely potted in between the two most recent investigations. Two large potholes and a disturbed burial were located on the site. Cultural material apparently not suitable to the collectors' purposes had been left neatly arrayed on plywood sheets, apparently adjacent to the hole from which they came. These materials were bagged by OSM personnel and are recorded below.

Materials Recovered (1983 investigations):

Provenience: Surface collection, shoreline, north end of site.

PREHISTORIC ARTIFACTS		
<u>CERAMICS</u>	<u>CT</u>	<u>Component</u>
<u>Grit or Coarse Sand Tempered</u>		
Bayou La Batre Scallop Impressed	1	Gulf Formational
Bayou La Batre Stamped	1	Gulf Formational
Santa Rosa Stamped	1	Gulf Formational
Residual Plain	4	
<u>Fine Sand Tempered</u>		
Residual Plain	21	
<u>Grog or Clay Tempered</u>		
Tchefuncte Incised	1	Gulf Formational
Residual Plain	17	
<u>Shell Tempered</u>		
Residual Plain	1	Mississippian
HISTORIC ARTIFACTS		
<u>CERAMICS</u>		19th century
<u>Refined Earthenware</u>		
Plain Whiteware	7	
<u>Stoneware</u>		
Gray Salt Glazed	7	
Albany Slip	3	
<u>GLASS</u>		19th century
Light Green Bottle Glass	12	
Dark Green Bottle Glass	3	
Amber Bottle Glass	1	
Aqua Bottle Glass	5	
Clear	15	
Residual Melted Fragments	40	
<u>METAL</u>		
Iron Nails (Unidentifiable Fragment)	6	
<u>OTHER</u>		
Slate Roofing	3	
Brick	66	

FAUNAL REMAINS

Large Mammal	6
Human (phalanx)	1

Provenience: Pothole No. 1.

PREHISTORIC ARTIFACTS

<u>LITHICS</u>	<u>CT</u>	<u>Component</u>
<u>Pecked and Ground Stone</u>		
Celt, Poll End, Hematitic Sandstone	1	
Steatite Vessel Fragment	2	
<u>Other</u>		
Sandstone, Unworked	2	
Hematitic Sandstone, Unworked	10	
Chert Nodule, "Tested", White and Red	1	
<u>CERAMICS</u>		
<u>Grit or Coarse Sand Tempered</u>		
Bayou La Batre Stamped	10	Gulf Formational
Bayou La Batre Scallop Impressed	1	Gulf Formational
Bayou La Batre Plain (Podal Support)	1	Gulf Formational
Residual Incised (Bayou La Batre Paste)	1	
Residual Plain	26	
<u>Fine Sand Tempered</u>		
Unclassified Zone Stamped (=Crooks Stamped with Sand Temper)	1	Gulf Formational (?)
Residual Plain	9	
<u>Grog or Clay Tempered</u>		
Tammany Punctated	3	Gulf Formational
Tchefuncte Scallop Impressed	2	Gulf Formational
Tchefuncte Plain (Podal Support)	5	Gulf Formational
Mazique Incised var. Unspecified	1	Late Woodland
Residual Incised	2	
Residual Plain	51	
<u>Fiber Tempered</u>		
Residual Plain	6	Gulf Formational
<u>Other</u>		
Poverty Point Object (Biconical)	1	Poverty Point
Amorphous Fired Clay	7	

HISTORIC ARTIFACTS

<u>CERAMICS</u>		19th century
<u>Refined Earthenware</u>		
Plain Whiteware (3 are burned)	8	
Yellow Glazed Ware	1	
<u>Earthenware</u>		
Brown and Yellow Lead Glazed (Sugar Bowl?)	2	
<u>Stoneware</u>		
Gray Salt Glazed	4	
<u>GLASS</u>		19th century
Light Green Bottle Glass	14	

Dark Green Bottle Glass	3
Amber Bottle Glass	1
Aqua Bottle Glass	7
Clear	1
<u>METAL</u>	
Cable Fragment	1
Unidentified Iron	1
Slag	1
 FAUNAL REMAINS	
Large Mammal	18
Fish	5

Provenience: Pothole No. 2.

PREHISTORIC ARTIFACTS		
<u>LITHICS</u>	<u>CT</u>	Component
<u>Chipped Stone</u>		
Quartzite Flake	1	
Pecked and Ground Stone		
Abraded Tabular Hematitic Sandstone	1	
<u>Other</u>		
Hematitic Sandstone, Unworked	19	
<u>CERAMICS</u>		
<u>Grit or Coarse Sand Tempered</u>		
Bayou La Batre Stamped	9	Gulf Formational
Bayou La Batre Scallop Impressed	1	Gulf Formational
Residual Plain	65	
<u>Fine Sand Tempered</u>		
Mandeville Stamped	1	Gulf Formational
Residual Plain	28	
<u>Grog or Clay Tempered</u>		
Tchefuncte Plain (Podal Support)	2	Gulf Formational
Lake Borgne Incised	1	Gulf Formational
Tammany Punctated	1	Gulf Formational
Twin Lakes Punctated	1	Middle Woodland
Marksville Incised <u>var. Unspecified</u>	2	Middle Woodland
Residual Plain	79	
<u>Bone Tempered</u>		
Residual Plain	1	Middle Woodland
<u>Shell Tempered</u>		
Residual Plain	10	Mississippian
 HISTORIC ARTIFACTS		
<u>METAL</u>		
Iron Nail (Unidentifiable Fragment)	2	
Unidentified Iron	1	
<u>OTHER</u>		
Cement Fragment	1	
 FAUNAL REMAINS		
Blunt-Bitted Bone Tool	2	

Large Mammal	20
Fish	1

Provenience: Pothole No. 3.

PREHISTORIC ARTIFACTS

CERAMICS

Grit or Coarse Sand Tempered

Bayou La Batre Stamped

Fine Sand Tempered

Residual Plain

Grog or Clay Tempered

Residual Plain

Temperless, Chalky Paste

St. Johns Plain

CT

Component

4

Gulf Formational

2

3

1

Gulf Formational

FAUNAL REMAINS

Bone Bodkin or Awl

1

Large Mammal

7

Fish

2

Human, Cranial

2

Human, Postcranial

2

Provenience: Vicinity of disturbed burial, north central part of site.

PREHISTORIC ARTIFACTS

LITHICS

Hematitic Sandstone, Unworked

2

CERAMICS

Grit or Coarse and Tempered

Bayou La Batre Stamped

5

Gulf Formational

(Podal Support)

1

Residual Plain

2

Grog or Clay Tempered

Tchefuncte Plain (Podal Support)

1

Gulf Formational

Unclassified Shell Stamped (Tchefuncte Paste)

1

Gulf Formational

Residual Plain

4

Other

Fired Clay (Daub?)

7

HISTORIC ARTIFACTS

GLASS

Melted Fragment

1

METAL

Unidentified Iron

1

FAUNAL REMAINS

Large Mammal, cut fragment

1

Large Mammal

51

Human, Cranial

12

Human, Postcranial

11

Cultural Affiliation: Gulf Formational, Woodland, Mississippian, Historic American (mid-nineteenth century).

Evaluation: The 1982 test excavations at Site 22Ja516 and subsequent analysis (Solis and Walling 1982) resulted in the identification of artifact assemblages attributable to prehistoric and historic occupations. Although a substantial amount of vandalism has taken place, the excavation data demonstrate that undisturbed areas remain which contain significant cultural resources representing occupations attributable to the Gulf Formational, Woodland, Mississippian, and historic American periods. Shovel tests indicate that the site is restricted to a 75 m east-west by 100 m north-south area. Throughout most of the site the artifact bearing matrix is concentrated above 35 to 45 cm below surface. A feature encountered in Test Unit 1 of the 1982 investigation, however, extends at least to a depth of 100 cm below surface and extends well below the average water table. In areas undisturbed by pothunting, preservation of artifacts, flora, fauna, and human skeletal material is excellent, primarily because of the presence of large quantities of shell. The shell indicates that gastropods e.g., Polynices, Littorina, and Crepidula, and bivalves Crassostrea and Mercenaria, were part of the dietary assemblage. Deer remains were also abundant in the faunal assemblage. Other unidentified terrestrial and marine species were found to be present. The faunal assemblage indicates that a number of immediate and nearby environments were exploited.

Human skeletal remains recovered during both the 1982 and 1983 investigations were from disturbed contexts. This, and information otherwise available (Greenwell n.d.; Mark Williams, personal communication), indicate that a prehistoric cemetery area is present. Shovel shaped incisors recovered from Test Unit 1 of the 1982 investigation are most probably from a disturbed prehistoric burial.

Only a small amount of flaked lithic artifacts was recovered, a not uncommon feature of coastal prehistoric settlement. Most of the lithic inventory consisted of unmodified introduced rock.

Ceramics dominate the artifact inventory at this site. The prehistoric ceramics recovered are attributable to Gulf Formational, Woodland and Mississippian occupations. Historic artifacts dating from the early to middle nineteenth century were also recovered.

The Bayou La Batre material may have been produced during both the Middle and Late Gulf Formational periods. At this point it cannot be said with certainty which of the two periods, or both, this material represents. A more secure assignment of the Middle Gulf Formational period can be given to the fiber tempered Wheeler Plain sherds. This also holds true for the plain biconical Poverty Point object recovered from the site.

The Late Gulf Formational period is represented by Tchefuncte ceramics (Ford and Quimby 1945, Phillips 1970). These include examples of the types Tchefuncte Plain, Tchefuncte Stamped, Tchefuncte Scallop Impressed, Tchefuncte Incised, Tchefuncte Red, Marksville Stamped, Orleans Punctated, Tammany Punctated, and Lake Borgne Incised. Some of the Baytown Plain var. Unspecified and much of the residual un-decorated clay-grog tempered

material may date to this period. The coarse sand tempered O'Neal Plain and the unclassified fine sand tempered plain also result from occupation of the site at this time.

The Bayou La Batre ceramics represent use of the site that bridges the Middle and Late Gulf Formational periods. These include the types Bayou La Batre Plain, Bayou La Batre Scallop Impressed, Bayou La Batre Stamped (Wimberly 1960), and one unclassified incised and punctated sherd with a Bayou La Batre paste.

The Middle Woodland period is represented at the site by several types. These date to the Marksville period and include Marksville Incised var. Unspecified, Marksville Stamped vars. Troyville and Unspecified, Catahoula Zoned Red var. Unspecified, Twin Lakes Punctated, Churupa Punctated var. Unspecified (Ford and Quimby 1945, Phillips 1970), residual bone tempered plain, and certainly much of the Baytown Plain var. Unspecified, as well as some of the unclassified decorated grog tempered sherds.

Little diagnostically Late Woodland material was recovered. Again some of the Baytown Plain var. Unspecified as well as some of the unclassified grog tempered decorated material may represent occupation during this period. One sherd of Mazique Incised, a Coles Creek type, is represented in the 1983 collections.

A Mississippian occupation at this site is represented by Mississippi Plain var. Unspecified sherds and one unclassified shell tempered incised sherd from the 1982 investigation. This material probably represents an occupation of the site by peoples aligned in some manner with the Mississippian Pensacola manifestation that was centered to the east in the Mobile Bay area. It is possible that some of the grog tempered Baytown Plain var. Unspecified sherds recovered may date to this time period (Phillips 1970).

The recovered chronologically sensitive historic material combines to indicate an early to middle nineteenth century time frame for the deposition of these artifacts. Various kinds of ceramics, glass, and metal artifacts of this period were recovered during the 1982 and 1983 investigations, including a mostly intact green French wine bottle bearing a seal. At least some of this material can be rather securely assigned to the Camp Jefferson Davis/Camp Twiggs occupation of the island in 1847-1852. Other materials may result from two caretaker's houses documented for this part of the island in the nineteenth century.

Further investigation at this site could elucidate the details of how the various prehistoric cultural manifestations relate to one another in this area. This particular area approaches the western limit of the Bayou La Batre ceramic tradition and the eastern limit of the Marksville and Tchefuncte ceramic traditions. Faunal materials as well as carbonized plant remains have been observed throughout the cultural deposits. These materials should provide important subsistence data and could yield significant radiocarbon dates. There is, in addition, evidence of intact features deriving from the Post-Mexican War army camp and hospital on the island.

Recommendations: Site 22Ja516 contains significant undisturbed cultural deposits. It is recommended that the site not be impacted. The Jackson County Port Authority has expressed interest in the possibility of preservation. This may be the preferred management option. Evidence of vandalism was noted throughout the site. A plan for preservation of the site should, therefore, include protection from vandalism as well as protection from impact by construction activities.

If preservation is not possible a mitigation plan should be implemented. Any future excavations should be conducted primarily by hand excavation methods. Water screening and flotation to insure recovery of subsistence data should be a part of recovery techniques. Excavators should also be prepared to deal with wet conditions in the lower levels.

NRHP Significance: Site 22Ja516 is considered eligible for inclusion in the National Register of Historic Places.

Impact Potential: Upland disposal area.

Site 22Ja618
("Little Greenwood Island" Site)

Project Area: Survey Area A.

Elevation: .0-3 ft. AMSL.

Environmental Setting: Site 22Ja618 is located on a small rise surrounded on all sides by a low tidal marsh. The rise is approximately 50 cm higher than the surrounding terrain. The soil is a poorly drained sandy loam soil common in the coastal lowlands. Site 22Ja618 is 150 m west of the mouth of Bayou Casotte.

Site Description: Site 22Ja618 is a shell midden. Cultural material is confined to the knoll area measuring 90 m north-south by 35 m east-west. Two shell concentrations occur in the southern and central parts of the site. These concentrations rise approximately 20 cm higher in elevation than the overall site area. The soil is Plummer loamy sand. The topsoil is a medium gray sand approximately 20 cm thick overlying a tan consolidated sandy loam with a dense shell concentration extending to 45 cm below surface. Most of the cultural material from 22Ja618 originates from this stratum. Underneath the cultural layer is a yellow to dark brown sand containing little cultural material. The site remains relatively undisturbed despite some evidence of looting.

Soil Type: Plummer loamy sand.

Nearest Water Source: Site 22Ja618 is surrounded by a low tidal marsh and is 150 m from Payou Casotte.

Current Land Use: Site 22Ja618 is not currently utilized for commercial purposes.

Investigation Procedure: Site 22Ja618 was located in a 1982 survey by University of Alabama personnel (Solis and Walling 1982). Three 30 cm by 30 cm test units were excavated to determine the depositional character of the site. The site was revisited in 1983 and was found to have been recently potted. Cultural material left beside one pothole was collected and is reported below.

AD-A139 295

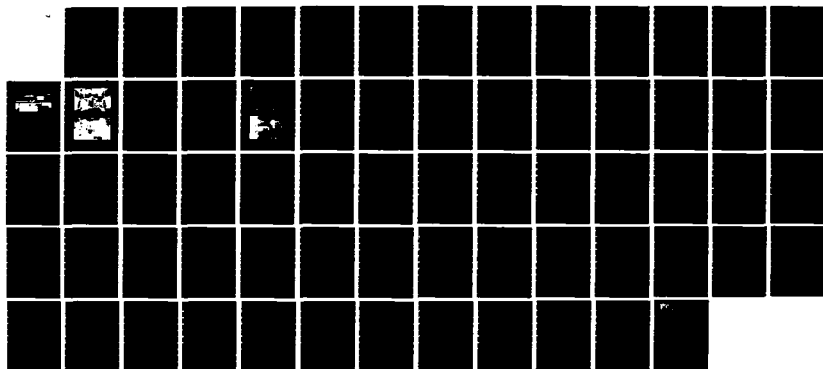
CULTURAL RESOURCES RECONNAISSANCE OF PASCAGOULA HARBOR
MISSISSIPPI(U) OSM ARCHAEOLOGICAL CONSULTANTS INC
MOUNDVILLE AL T S MISTOVICH ET AL. 1983
OCE-SAM/PD-EC-83-001 DACW01-83-C-0036

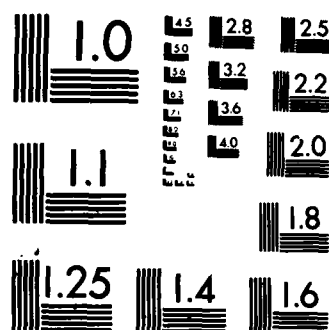
2/2

UNCLASSIFIED

F/G 5/6

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Materials Recovered (1983 investigations):

Provenience: Southernmost pothole.

PREHISTORIC ARTIFACTS

<u>LITHICS</u>	<u>CT</u>	<u>Component</u>
<u>Pecked and Ground Stone</u>		
Steatite Vessel Sherd	1	
<u>Other</u>		
Hematitic Sandstone, Unworked	8	
<u>CERAMICS</u>		
<u>Grit or Coarse Sand Tempered</u>		
Twin Lakes Punctated		
var. Twin Lakes	1	Middle Woodland
Residual Plain	1	
<u>Fine Sand Tempered</u>		
Mobile Cord Marked	2	Late Woodland
Wakulla Check Stamped	2	Late Woodland
Residual Plain	17	
<u>Grog or Clay Tempered</u>		
Mulberry Creek Cord Marked		
var. Unspecified	1	Late Woodland
Pontchartrain Check Stamped		
var. Unspecified	2	Late Woodland
Residual Plain	9	
<u>Shell Tempered</u>		
Pensacola Incised var. Unspecified	1	Mississippian
Pensacola Incised var. Perdido Bay	1	Mississippian
Residual Incised	1	Mississippian
Residual Plain	34	Mississippian

HISTORIC ARTIFACTS

Brick Fragment	2
----------------	---

FAUNAL REMAINS

Small Mammal	4
Turtle	1
Bird	3
Fish	16

Cultural Affiliation: Middle Woodland to Mississippian.

Evaluation: Site 22Ja618 contains potentially significant cultural resources. The site remains relatively undisturbed. Only one small pothole was noted in 1982. However, during these investigations several new potholes were noted. The recovered ceramics indicate primarily Mississippian and Late Woodland (Weeden Island-Coles Creek) occupations. The settlement type is different from that represented at Site 22Ja516. The density of artifacts, floral, and faunal materials is significantly lower than at the predominantly earlier 22Ja516 site, suggesting that during the Late Woodland and Mississippian periods this location was a temporary settlement, probably used as a base from which the estuarine environments could be exploited to extract supplemental food sources. No diagnostic lithic materials were recovered, with the exception of a single steatite

bowl sherd. The other lithic recovery consisted of introduced rock, i.e., unmodified rock not indigenous to the soils of the site. Shovel tests during 1982 and 1983 indicate that the site is restricted to a 35 m by 90 m area on a small knoll. The artifact bearing matrix appears to be concentrated within Stratum 2 in all three 1982 test units, and extends to a depth of approximately 45 cm below the present surface. Few artifacts were recovered below 45 cm in the three 1982 test units which extended to a depth of 60 cm below surface. Although few nineteenth century artifacts have been recovered to date, the site can probably be expected to yield evidence of the 1847-1852 Camp Jefferson Davis/Camp Twiggs occupations as well.

Recommendations: It is recommended that Site 22Ja618 not be impacted. If impact is unavoidable, a management plan to mitigate this cultural resource should be implemented, along the general lines of the procedures recommended for 22Ja516.

NRHP Significance: Site 22Ja618 is considered eligible for inclusion in the National Register of Historic Places.

Impact Potential: Upland disposal area.

Site 22Ja537
("Bone Yard" Site)

Project Area: Survey Area P.

Elevation: 1 ft AMSL.

Environmental Setting: Site 22Ja537 is located along a 1 km stretch of beach northeast of Point Aux Chenes. The site is bordered to the southwest by Point Aux Chenes Bay and is surrounded in all other directions by a low flat tidal marsh. Three small north-south trending first order streams bisect the site area.

Site Description: Site 22Ja537 was originally recorded in the Mississippi State Department of Archives and History site files in 1972. The site was referred to as the "Bone Yard" site due to the large amounts of fossilized mammalian bone found at the archaeological site. The Poverty Point-Bayou La Batre-Tchefuncte period site was reported to have a midden deposit up to "18 inches deep in the mud bank."

The Bone Yard site, as relocated by OSM personnel in 1983, has been completely destroyed by hurricane action. Extensive shovel testing revealed no intact remnant of the reported midden. The sites' presence is marked by ceramic and lithic artifacts scattered along a 1 km stretch of beach. These artifacts have been apparently redeposited by wave action. The soil of the region is a tidal marsh soil of 30 cm of clean sand underlain by a mottled black clay.

Soil Type: Tidal marsh.

Nearest Water Source: The site is surrounded by tidal marsh and Gulf waters. Three small first order streams cross the site area.

Current Land Use: The site is not currently utilized for commercial purposes.

Investigation Procedure: Site 22Ja537 was previously recorded in the Mississippi State Site Files. The site was revisited in 1983. Fifteen shovel tests and one 40 cm by 40 cm test unit were excavated in an attempt to locate any cultural deposits remaining intact. Artifacts deposited on the beach surface were surface collected.

Materials Recovered:

Provenience: Surface collection from beach, western subarea.

PREHISTORIC ARTIFACTS

<u>LITHICS</u>	<u>CT</u>	<u>Component</u>
<u>Chipped Stone</u>		
Utilized Flake, Brown Chert	1	
<u>Pecked and Ground Stone</u>		
Abraded Tabular Hematitic Sandstone	1	
<u>Other</u>		
Hematitic Sandstone, Unworked	4	
<u>CERAMICS</u>		
<u>Grit or Coarse Sand Tempered</u>		
Bayou La Batre Stamped (rim)	1	Gulf Formational
Unclassified Incised/Punctated (Bayou La Batre Paste)	1	Gulf Formational
McLeod Check Stamped	1	Late Woodland
Residual Eroded Plain	42	
<u>Fine Sand Tempered</u>		
Mobile Cord Marked	1	Late Woodland
Residual Plain	5	
<u>Grog or Clay Tempered</u>		
Crooks Stamped	1	Gulf Formational (?)
Residual Plain	15	
<u>Other</u>		
Amorphous Fired Clay	2	

HISTORIC ARTIFACTS

<u>CERAMICS</u>		
<u>Refined Earthenware</u>		
Olive Glazed Whiteware	1	Late 19th-20th century
<u>GLASS</u>		
Light Green Bottle Glass	1	Late 19th-20th century

FAUNAL REMAINS

<u>FOSSILIZED BONE (PLEISTOCENE)</u>		
Large Fish (Vertebra)	1	
Tortoise Shell	2	

Provenience: Surface collection from beach, eastern subarea.

PREHISTORIC ARTIFACTS

<u>LITHICS</u>	<u>CT</u>	<u>Component</u>
<u>Chipped Stone</u>		
Flake (Reddish Brown Chert)	1	

CERAMICS

Grit or Coarse Sand Tempered

Bayou La Batre Scallop Impressed	1	Gulf Formational
Bayou La Batre Plain (Podal Support)	2	Gulf Formational
Alexander Incised	1	Gulf Formational
Alexander Pinched	1	Gulf Formational
Residual Eroded Plain	67	

Fine Sand Tempered

McLeod Simple Stamped	1	Late Woodland
Residual Plain	6	

Grog or Clay Tempered

Tammany Punctated var. Unspecified	1	Gulf Formational
Residual Plain	26	

Fiber Tempered

Residual Plain	1	Gulf Formational
----------------	---	------------------

Other

Amorphous Fired Clay	3	
----------------------	---	--

HISTORIC ARTIFACTS

GLASS

Light Green (Medicine Bottle Fragment, Embossed "...WOL...")	1	Late 19th-early 20th century
---	---	------------------------------

FAUNAL REMAINS

UNFOSSILIZED BONE

Large Mammal	12	
Fish (vertebra)	1	

FOSSILIZED BONE (PLEISTOCENE)

Large Mammal	7	
Large Fish (vertebra)	1	
Tortoise Shell	1	

Cultural Affiliation: Poverty Point, Gulf Formational, Late Woodland, late nineteenth to twentieth century American. A limited inventory of materials present is given in Webb (1982:71), under the name "Point Aux Chenes" site.

Evaluation: Site 22Ja537 was reported to have been a specialized site with intact cultural deposits. The site, however, has been destroyed by hurricane action, according to local informants.

Recommendations: No further work is recommended.

NRHP Significance: Site 22Ja537 is not considered eligible for inclusion in the National Register of Historic Places.

Impact Potential: Disposal area.

Site 22Ja522

Project Area: Survey Area N.

Elevation: N/A.

Environmental Setting: Site 22Ja522 is reported as being within a tidal marsh area, northwest of Bayou Rosa and southeast of Priest Bayou.

Site Description: Concerted efforts failed to relocate site 22Ja522 as previously recorded in the Mississippi State Site Files.

Soil Type: Tidal marsh.

Nearest Water Source: N/A.

Current Land Use: N/A.

Investigation Procedure: Surveyors attempted to locate Site 22Ja522 according to locational information in Mississippi State Site Files.

Materials Recovered: No recovery.

Cultural Affiliation: Unknown.

Evaluation: No pertinent data exist in order to evaluate this site, if it still exists.

Recommendations: None.

NRHP Significance: Not ascertained.

Impact Potential: Disposal area.

Site 22Ja523

Project Area: Survey Area K.

Elevation: N/A.

Environmental Setting: Site 22Ja523 is indicated in Mississippi State Site Files as being east of Bayou Casotte. The site area has been utilized as a disposal area for dredged materials.

Site Description: Site 22Ja523 was originally located in 1980 (Wright 1980). The site is an early twentieth century cemetery. Iron posts marked each corner of the cemetery. The 1983 OSM survey failed to relocate Site 22Ja523. The survey crew was denied access to the northern portion of Section K. The southern areas examined by OSM personnel were deeply covered with fill material.

Soil Type: Artificial fill.

Nearest Water Source: N/A.

Current Land Use: Dredge-fill disposal area.

Investigation Procedure: The southern portion of Survey Area K was visually examined and shovel tested, in an attempt to relocate Site 22Ja523.

Materials Recovered: No recovery.

Cultural Affiliation: Twentieth century American.

Evaluation: No pertinent data were recovered during the present survey relevant to the evaluation of this site.

Recommendations: None.

NRHP Significance: This historic cemetery was not recommended by Wright (1980) for inclusion in the National Register of Historic Places.

Impact Potential: Upland disposal area.

Site 22Ja592

Project Area: Survey Area N.

Elevation: N/A

Environmental Location: The location of Site 22Ja592 is recorded as being at the junction of Bayou Rosa and Point Aux Chenes.

Site Description: Survey reconnaissance by OSM personnel failed to relocate Site 22Ja592. Local informants indicated that the site was destroyed totally by coastal erosion.

Soil Type: N/A.

Nearest Water Source: Bayou Rosa.

Current Land Use: N/A.

Investigation Procedure: Visual reconnaissance of the reported location of site 22Ja592 was performed.

Materials Recovered: No recovery.

Cultural Affiliation: Unknown.

Evaluation: No pertinent data exist in order to evaluate this site, if it still exists.

Recommendations: None.

NRHP Significance: N/A.

Impact Potential: N/A.

Site 22JaA-1

Note: Because of its relatively recent age, the Mississippi Department of Archives and History has denied an official State of Mississippi site number for this site (Samuel McGahey, personal communication).

Project Area: Upland Disposal Area A..

Elevation: 5 ft. AMSL.

Environmental Location: Site 22JaA-1 is located in the northeastern area of Greenwood Island, 200 m west of Bayou Casotte. The site area has been radically affected by spoil disposal activities, leaving approximately 10 ft of silt, mud, and sand fill on top of cultural deposits.

Site Description: Site 22JaA-1 is the former location of a municipal land fill and a sewage treatment facility. The site area is currently utilized

as a dog pound. The site has been heavily affected by spoil disposal activities leaving over 10 ft of fill over the cultural strata. The cultural stratum is approximately 70 cm thick at maximum. Approximately 15 m of this deposit is exposed in a drainage ditch along the western perimeter of the site area.

Soil Type: Artificial fill. Spoil disposal area.

Nearest Water Source: Site 22JaA-1 occurs 200 m west of Bayou Casotte..

Current Land Use: The site area is currently utilized as a dog pound.

Investigation Procedure: Site 22JaA-1 was discovered by examining a ditch profile intruding into the site. A 15 m section of this ditch was then surface collected.

Materials Recovered:

Provenience: Materials recovered from ditch crossing site.

HISTORIC ARTIFACTS

<u>CERAMICS</u>	<u>CT</u>	<u>Component</u>
<u>Refined Earthenware</u>		Early 20th century
Plain Whiteware	8	
Blue Transfer Printed Whiteware	3	
Banded Whiteware	2	
Aqua Glazed Ware	1	
<u>Stoneware</u>		Early 20th century
Gray Ash Glaze Jug Fragment	1	
("...[L]IQUOR,[NATCHE]Z, MISS.")		
<u>GLASS</u>		
Cobalt Blue Bottle Glass	3	
Amber Bottle Glass	5	
Clear Glass Tumbler	1	
Milk Glass	2	
<u>OTHER</u>		
Brick Fragment	2	

Cultural Affiliation: Early to middle twentieth century American.

Evaluation: The random disposal pattern of material in the cultural deposit, along with its relatively recent provenience, indicates that Site 22JaA-1 is not a significant cultural resource.

Recommendations: No further work is recommended.

NRHP Significance: Ineligible for inclusion in the National Register of Historic Places.

Impact Potential: Upland spoil disposal area.

Site 22JaE-1

Note: Because of its relatively recent age, the Mississippi Department of Archives and History has denied an official State of Mississippi site number for this site (Samuel McGahey, personal communication).

Project Area: Survey Area E.

Elevation: 10 ft AMSL.

Site Description: Site 22JaE-1 is located on a small rise in close proximity to an oak stand. The site area is bordered to the east by low marshy ground. A channelized stream drainage occurs 1 km east of the site. The soil of the site is a poorly drained loamy sand.

Soil Type: Scranton loamy sand.

Nearest Water Source: Site 22JaE-1 is 1 km west of a channelized stream drainage.

Current Land Use: Logging.

Investigation Procedure: Site 22JaE-1 was located by visual reconnaissance of the survey area. The site area was surface collected. Ten shovel tests were excavated across the site on two axes, in order to determine the site's depth and integrity. All were culturally sterile.

Materials Recovered:

Provenience: Surface collection.

HISTORIC ARTIFACTS

CERAMICS

CT Component

Refined Earthenware

Plain Whiteware

3 Late 19th-20th century

Stoneware

Gray Salt Glazed

1 Late 19th-20th century

GLASS

Clear

1

Aqua

3 Late 19th-20th century

Cultural Affiliation: Late nineteenth to twentieth century American.

Evaluation: Site 22JaE-1 is a surface scatter of historic artifacts without buried cultural deposits. Logging activities have seriously affected the integrity of the site.

Recommendations: No further work is recommended.

NRHP Significance: Site 22JaE-1 is considered ineligible for inclusion in the National Register of Historic Places.

Impact Potential: Upland spoil disposal area.

Site 22JaMM1

Note: Because of its relatively recent age, the Mississippi Department of Archives and History has denied an official State of Mississippi site number for this site (Samuel McGahey, personal communication).

Project Area: Survey Area MM.

Elevation: 10 ft AMSL.

Environmental Setting: Site 22JaMM1 is located on a small knoll bordered to the south, east, and west by a low marshy area. The marsh is drained by a small intermittent stream 100 m east of the site. The site is 900 m east of the Pascagoula River.

Site Description: Site 22JaMM1 is a light scatter of historic artifacts approximately 40 m north-south by 20 m east-west. The site represents a historic structure. The site is enclosed by a circular driveway. A large oak tree is located near the center of the knoll. The soil is a poorly drained silt loam underlain by a silty clay. Heavy concentrations of charcoal were noted in the top 20 cm of the soil profile. However, no intact buried cultural deposits were located by shovel testing the site area.

Soil Type: Coxville silt loam.

Nearest Water Source: The site is bordered by a low marshy area, drained by an intermittent stream 100 m to the east.

Current Land Use: Site 22JaMM1 is not currently utilized commercially.

Investigation Procedure: Site 22JaMM1 was located by visual inspection of the survey area. The site was surface collected and shovel tested by means of ten shovel tests along two perpendicular lines. Materials recovered from a single test are listed below.

Materials Recovered:

Provenience: Shovel test, center of site.

HISTORIC ARTIFACTS

CERAMICS

Plain Whiteware

CT
1

Component

Early 20th century

GLASS

Light Green Bottle Glass
("Coca Cola")

1

Early 20th century

OTHER

Brick Fragment

1

Cultural Affiliation: Late nineteenth to twentieth century American.

Evaluation: Site 22JaMM1 represents a historic structure no longer standing, that lacks buried cultural deposits. Further investigation would be unlikely to produce significant data.

Recommendations: No further work is recommended.

NRHP Significance: Site 22JaMM1 is not considered eligible for inclusion in the National Register of Historic Places.

Impact Potential: Disposal area.

CHAPTER 8

MARINE SURVEY RESULTS

Introduction

The marine portion of the cultural resource survey of Pascagoula Harbor entailed inspection of the ship channel extending from the Gulf of Mexico through the Mississippi Sound into the Pascagoula River and Bayou Casotte and a sample survey of seven disposal sites (Figure 4). Approximately 260 miles of survey lines were performed with state of the art remote sensing systems, resulting in the discovery of 501 magnetic anomalies. The following chapter describes the marine survey design and methods and the results obtained.

The Remote Sensing System

To fulfill the survey requirements, an integrated system of remote sensing equipment capable of detecting magnetic anomalies and sonar contacts and accurately determining their positions was employed. The remote sensing instruments used were as follows:

Marine Survey Magnetometer. A Geometrics G806m Proton Precession Magnetometer coupled with a G801 marine sensor was used for detection of magnetic anomalies. The magnetometer senses the earth's ambient magnetic field and notes anomalies in both digital and analog formats.

In this survey, the magnetometer was set to a sensitivity of one gamma, with a sample rate of once a second. The analog output was recorded with a chart speed of eight centimeters per minute by a Soltec dual channel chart recorder. By recording both the 100 and 1000 gamma scales, the magnetic value and peak of an anomaly can be more accurately interpreted.

The only variable factor in the magnetometer operation was the tow length of the sensor cable. The depth of the sensor is dependant on the vessel speed (5 knots) and the length of cable deployed; therefore, as the magnetic amplitude of an anomaly is directly proportional to the distance from the source to the sensor, the tow length was adjusted to tow the sensor as close to the harbor floor as possible.

Side Scan Sonar. An E.G.&G. Mark 1B dual track side scan sonar with a Model 272 tow fish was used to help identify the nature and source of any magnetic anomalies. The MK1B operates at a pulse length of 0.1 msec. and a frequency of 105 KHZ. The tow fish has an adjustable beam width of 20° or 50°, giving a maximum coverage of 500 m to either side.

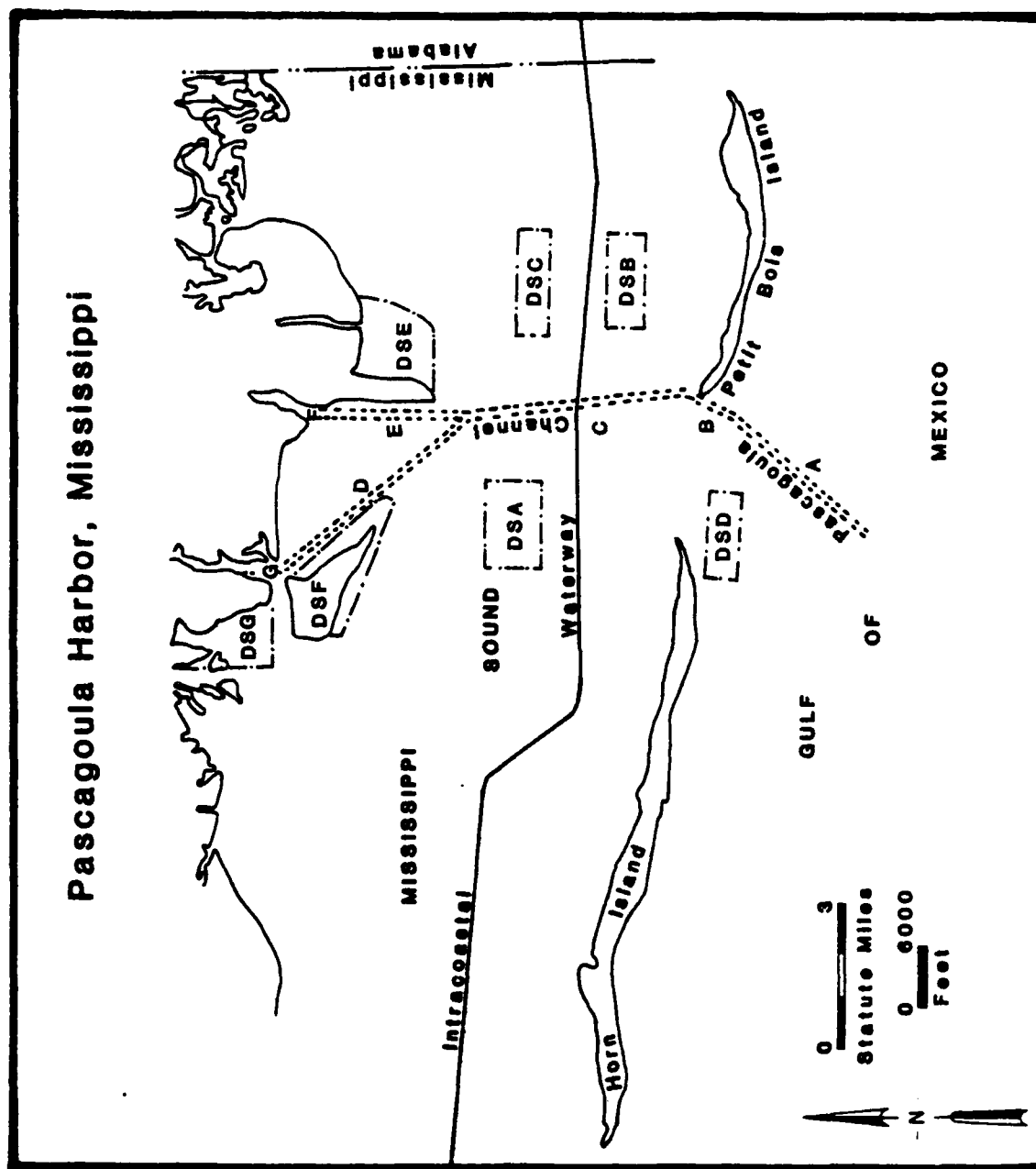


Figure 4. Channel and Disposal Site Index.

Survey Depth Recorder. A Raytheon DE719B survey depth recorder provided continuous depth measurements in analog and digital formats. The digitized depth data were interfaced to the positioning system. The depth recorder assists in determining anomaly location in the vertical plane as well as providing information necessary to achieve optimum quality data with the side scan sonar and magnetometer.

Positioning Equipment. Two positioning systems were utilized in the reconnaissance survey. The primary system consisted of a Del Norte 540 DDMU (Digital Distance Measuring Unit) Trisponder System. This system is composed of a shipboard control console and master antenna unit with three remote beacons. The control console was interfaced with a Hewlett-Packard computer (HP9826), a printer (HP2671-G), and a plotter (HP9872D) (Plate 3). The interfaced system provided a magnetic record, a printed ("hard copy") record, and a post plot of the survey (Plate 4).

In the disposal sites that were too shallow for the primary research vessel to safely operate, positioning was maintained with a shore based Hewlett-Packard Electronic Distance Meter (HP3810A). The EDM system provided distance and azimuth data with control maintained via UHF hand held radios. This system enabled the shallow water survey team to collect data of comparable quality to that obtained in the deep water areas.

Survey Vessels. The varying water depths of the areas surveyed (60 feet to less than 1 foot) required the use of two survey vessels. The primary survey vessel was R/V GAMMA, a shallow draft (2 ft 1 in) research boat of sufficient size (34 ft) to accommodate the survey equipment and personnel (Plate 5). R/V GAMMA is a registered vessel and operated by a Coast Guard licensed captain. To survey the areas GAMMA was unable to operate in due to shallow water, a Zodiac Grand Raid IV inflatable boat was used (Plate 6). Fully loaded for survey (3 men and equipment), the Zodiac can effectively survey in water as shallow as one foot.

Survey Methods

The survey methods were designed from the growing body of literature compiled by marine archaeologists as well as the extensive field experience of the survey team members. Two separate inspection methods were developed, with a higher sampling rate designed for the channel improvements and a less intensive rate designed for the disposal sites.

The 501 anomalies listed in Table 6 in this chapter represent the overall findings of the reconnaissance survey. The majority (368) were encountered within the twenty-one miles of ship channel inspected. Magnetometer and side scan sonar were used to inspect the length of the channel, beginning with a centerline survey run and three runs on either side, or parallel, to centerline at 50 m (164 ft) intervals. Thus, coverage of the channel was composed of a continuous survey pattern 300 m (984 ft) wide and comprised approximately 150 total miles. The remaining 133 anomalies were recorded in open water disposal sites inspected within a 200 m (656 ft) lane spacing sampling design. Magnetometer and side scan data were collected in four of these disposal sites; three disposal sites contained insufficient water depth for side scan operation and were in-



Plate 3. Navigation computer and plotter.

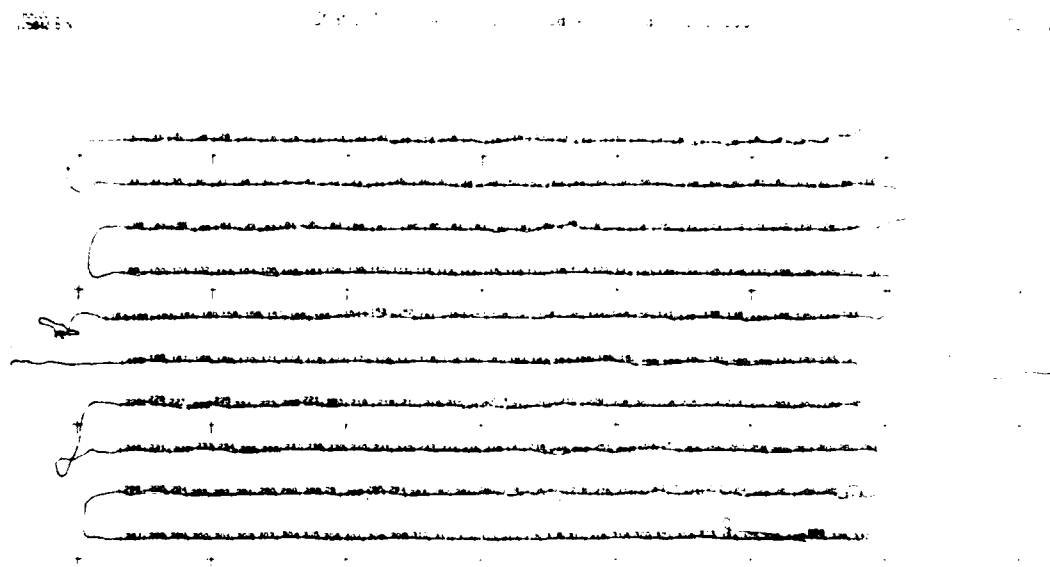


Plate 4. Post-plot, disposal area A.

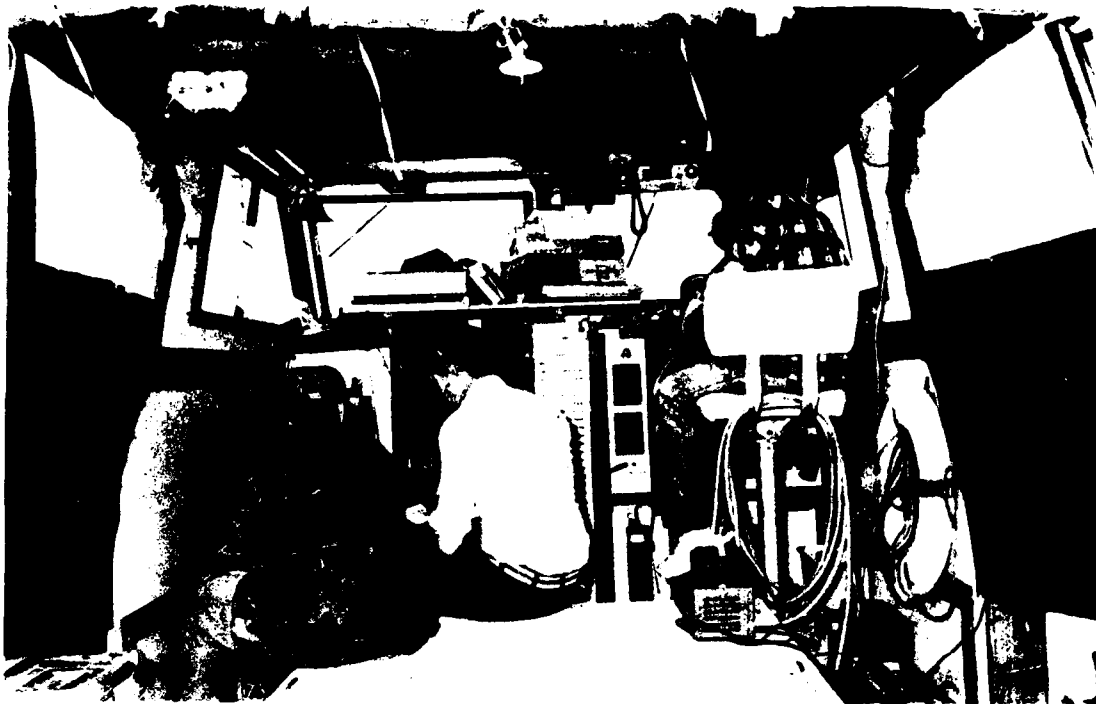


Plate 5. Interior view on board R/V Gamma.



Plate 6. Shore party, shallow water disposal site.

spected with magnetometer only. Roughly 110 miles of survey lines were logged in the disposal site inspection.

Throughout the majority of the survey, vessel speed was held between 4 and 6 knots, with the deciding factor in vessel speed being the quality of data obtained from the remote sensing equipment. In the shallow water disposal sites, vessel speed for the Zodiac was slower than 4 knots. The slower speed enabled the shore party to provide more accurate positioning, increased the data sampling rate, and kept safety factors high in the normally hazardous shallow water areas.

A magnetic noise level of ± 2 gammas was deemed the maximum acceptable level. Any line segments with "noisy" data were resurveyed to keep the data of sufficient quality to identify discreet magnetic sources. During the survey, elements of the Air National Guard held tactical exercises that created magnetic noise problems which required resurveying the affected lines on a day when these exercises were not held.

The survey was designed with nearly complete redundancy of equipment and spare parts so that any equipment failure could be handled quickly with minimal down time. One item of concern was the difficulty in maintaining consistent positioning control encountered previously in the reconnaissance survey of Mobile Harbor (Mistovich and Knight 1983). During that survey, a Motorola Mini-Ranger IV microwave positioning system was used and found to be highly susceptible to certain forms of microwave radar and radar frequencies in use in the area. By selecting a lower frequency microwave positioning system (Del Norte Trisponder) in the Pascagoula investigation, the team was able to collect data without any loss of positioning control due to external interference.

Survey Results

Introduction to Tables. The following tables are a compilation of results obtained from the remote sensing survey. Table 6 is a list of all anomalies encountered. Tables 7 and 8 present large and/or complex anomalies in two categories, discussed below. Table 9 lists clusters of anomalies.

Each anomaly listed in the tables is designated trinomially by survey segment, line number, and anomaly number. For example, A-2-1 represents an anomaly which was the first encountered on survey line number two in segment A. Segment designations were dictated by positioning systems requirements and vary in length (see Figure 4). Segments A through G are located along the Pascagoula ship channel, including the Pascagoula River and Bayou Casotte channels, with segment A representing the southernmost channel section. DSA through G designates the seven open water disposal sites, A-D located in deep water and E-G in shallow water adjacent to the mainland.

Numerical gaps in the anomaly tables, e.g., A-1-1, are the result of the bilevel system of data interpretation employed. The original anomaly tally was produced in the field as data were collected. Survey lines which obtained excessively noisy records were rerun until acceptable data were received. These in turn were compared with the initial runs to check

the accuracy of results and a few "anomalies" originally listed were discarded as artifacts of radar interference, etc. The intensity of each anomaly listed in the tables is expressed as maximum gamma inflection.

Side scan sonar targets were discovered in association with a number of anomalies. These targets are noted in the side scan column for the channel and disposal areas A-D. Side scan correlations were not possible in disposal areas E-G due to extremely shallow water depths. Included in the side scan column are known magnetic sources which occurred in survey areas. Pipelines associated with refineries in the area, for instance, accounted for forty large anomalies recorded. Water depth in feet for each anomaly location is listed in column four. Comments on the general character of the anomaly's magnetic signature appear in the final column of Table 6.

Tables 7 and 8 present large and/or complex anomalies in two categories. Category I anomalies listed in Table 7 are those in which the magnetic inflection of the anomaly exceeds 20 gammas (g). This was done in an attempt to discard the numerous geographically isolated anomalies expressed by small, sharp inflections and indicative of the ubiquitous, scattered pieces of ferrous debris expected in an active harbor environment. The anomalies listed in Table 7 were subjected to closer inspection in the second round of data analysis. They do not include those which were identified through side scan sonar records as representative of cables or those correlated with known pipeline routes, etc. The inflection pattern of a large number of the Category I anomalies were single peaks of short duration (less than three seconds); largely indicative of single objects of varying size (Plate 7). Category I anomalies are not considered further unless evaluated as Category II or identified within a complex cluster of anomalies, discussed below.

Category II anomalies are presented in Table 8. Characteristically, the signature of these anomalies exceeds three seconds duration and is expressed as a complex, multiple return (Plate 8). They represent the type of complex targets which are typical in dispersed shipwreck sites. Category II anomalies are considered potentially significant sites at this stage of investigation.

An important factor of interpretation reflected in Table 9 is clustering of anomalies. A number of relatively unimpressive anomalies in close proximity to each other can represent a potentially significant site when viewed as a single entity. The cluster definition used follows that developed for nearby Mobile Bay (Mistovich and Knight 1983), i.e., three or more anomalies which are located within an area of 40,000 m². This is based on the typical extent of shipwreck sites on active coasts as reported by Clausen (1965). It is a somewhat liberal definition in view of the more concentrated wreck scatter average for protected bays reported by Arnold (1974). We are inclined toward a liberal definition for two reasons: The paucity of data concerning the extent of wreck scatters and the fact that this investigation was performed at the reconnaissance level. Twenty-one such clusters, containing from three to ten anomalies each, are listed in Table 9.

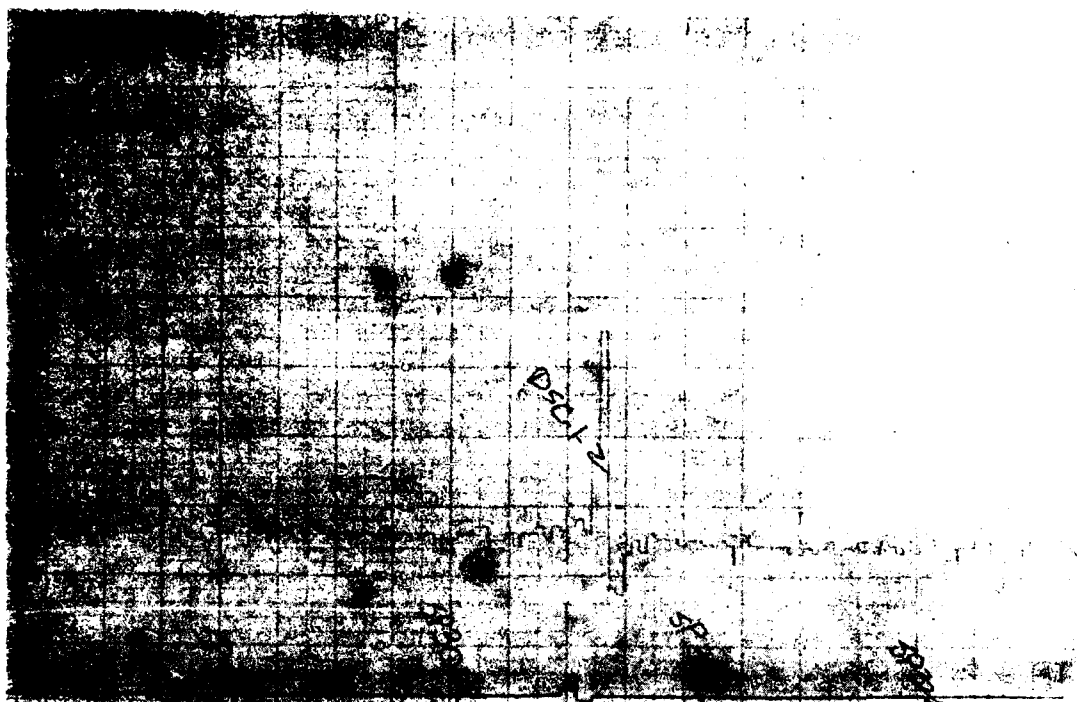


Plate 7. Category I Anomaly DSC - 1 - 2.

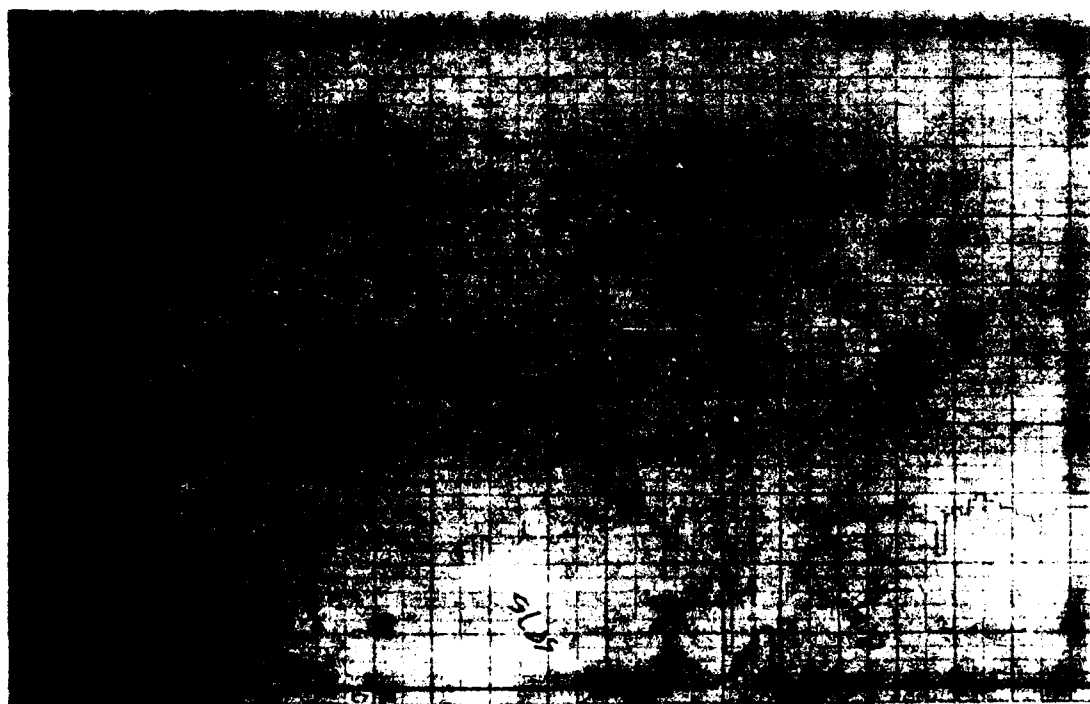


Plate 8. Category II Anomaly C - 1 - 1.

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel (n=368)</u>				
A-0-1	8	---	33.0	Broad negative
A-0-2	15	---	32.8	Negative spike
A-0-3	106	Unidentified target to starbd.	31.7	Sharp Bipolar
A-0-4	15	---	32.9	Bipolar
A-0-5	19	---	32.9	Bipolar
A-1-2	35	---	33.5	Broad Bipolar
A-1-3	10	---	30.5	Bipolar
A-1-4	8	---	32.6	Sharp Bipolar
A-1-7	20	Unidentified target to port	31.7	Bipolar
A-1-8	18	---	32.0	Bipolar
A-1-9	10	---	35.7	Negative Spike
A-1-10	8	---	33.3	Broad Bipolar
A-2-1	6	Linear target to port	33.1	Bipolar
A-2-2	14	Small target to port	33.2	Bipolar
A-2-4	8	---	33.1	Sharp Bipolar
A-2-5	45	---	31.0	Bipolar
A-2-6	60	---	28.5	Sharp Bipolar
A-2-7	12	---	13.4	Sharp Bipolar
A-2-8	22	---	12.0	Bipolar
A-3-1	10	---	22.9	Bipolar
A-3-3	92	---	10.1	Positive spike
A-3-4	55	---	15.5	Negative spike
A-3-5	8	---	28.2	Bipolar
A-3-6	6	---	32.5	Broad Bipolar
A-4-1	11	---	34.2	Sharp Bipolar
A-4-2	80	---	32.0	Positive Spike
A-4-3	13	---	32.1	Sharp Bipolar
A-4-4	14	---	32.3	Bipolar
A-4-5	15	---	35.3	Bipolar
A-4-6	16	Large target to port	35.3	Bipolar
A-4-7	23	Small target to port	34.5	Bipolar
A-5-1	24	---	24.3	Bipolar
A-5-2	9	---	28.0	Bipolar
A-5-3	225	---	31.6	Negative Spike
A-5-4	20	---	31.0	Broad Bipolar
A-6-1	10	Small target to starboard	28.2	Bipolar
A-6-2	21	---	27.6	Broad Bipolar
A-6-3	22	2 small targets to starboard	21.6	Sharp Bipolar
A-6-4	145	---	13.4	Complex Bipolar
A-6-5	24	Small target to starboard	21.4	Broad Bipolar
A-6-6	24	---	28.4	Broad Bipolar
B-1-1	5	Debris to port	46.0	Broad Bipolar
B-1-2	70	---	44.0	Bipolar
B-1-3	95	---	42.0	Bipolar
B-1-4	8	---	50.0	Broad Bipolar

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel</u> (Continued)				
B-1-5	13	---	50.0	Bipolar
B-1-6	10	---	55.0	Bipolar
B-1-7	66	Target to port	50.0	Bipolar
B-2-1	12	---	53.0	Broad Bipolar
B-2-2	60	Target to starboard (anchor)	60.0	Broad Negative
B-2-3	8	Debris to starboard	40.0	Broad Bipolar
B-3-1	45	---	15.0	Bipolar
B-3-2	10	---	35.0	Bipolar
B-3-3	8	---	60.0	Bipolar
B-4-1	10	---	30.0	Bipolar
B-4-2	8	---	37.0	Bipolar
B-4-3	15	---	35.0	Bipolar
B-4-4	12	---	18.0	Bipolar
B-5-1	13	---	45.0	Bipolar
B-5-2	10	---	61.0	Bipolar
B-5-3	10	---	63.0	Bipolar
B-5-4	8	---	20.0	Bipolar
B-6-3	13	---	45.0	Bipolar
B-6-4	27	---	23.0	Broad Bipolar
B-6-5	11	---	34.0	Broad Bipolar
B-7-1	100	Small target to starboard	30.0	Bipolar
B-7-2	9	---	35.0	Bipolar
B-7-3	12	---	36.0	Bipolar
B-7-4	45	---	36.0	Sharp Bipolar
B-7-5	240	---	38.0	Negative Spike
B-7-6	65	---	46.0	Broad Negative
B-7-7	20	---	35.0	Bipolar
B-7-8	10	Debris to port	26.0	Bipolar
B-7-9	90	Scour to starboard	19.0	Bipolar Spike
B-7-10	127	---	20.0	Bipolar Spike
C-0-1	8	---	44.6	Negative Spike
C-0-2	11	---	43.6	Broad Negative
C-0-3	18	Debris	44.1	Broad Negative
C-0-4	11	---	43.3	Bipolar
C-0-5	345	Pipeline	42.5	Complex Bipolar
C-0-6	10	---	42.0	Broad Positive
C-1-1	100	Unidentified target to starbd.	40.8	Bipolar
C-1-2	105	Pipeline	40.2	Complex Bipolar
C-1-3	30	---	37.5	Broad Bipolar
C-1-4	9	---	37.3	Bipolar
C-1-5	9	---	37.4	Bipolar
C-1-6	18	---	38.4	Broad Bipolar
C-1-7	23	Debris to starboard	39.8	Positive Spike
C-1-8	15	---	39.3	Bipolar
C-1-9	7	---	42.2	Bipolar

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel (Continued)</u>				
C-1-10	8	---	41.1	Bipolar
C-1-11	21	Cable to port	44.2	Bipolar
C-2-1	25	Unidentified target to port	25.9	Bipolar
C-2-2	7	---	24.3	Bipolar
C-2-3	140	Debris	19.1	Bipolar
C-2-4	48	Cable to port	20.2	Sharp Bipolar
C-2-5	9	---	21.8	Bipolar
C-2-6	51	---	19.5	Broad Positive
C-2-7	17	---	19.5	Bipolar
C-2-8	41	---	18.9	Bipolar
C-2-9	320	Pipeline	22.9	Complex Bipolar
C-2-10	22	---	18.5	Bipolar
C-2-11	23	Cable	17.6	Broad Negative
C-3-1	9	---	26.6	Bipolar
C-4-1	6	---	43.0	Bipolar
C-4-2	6	Debris to port	40.2	Bipolar
C-4-3	44	Unidentified target to port	38.3	Bipolar
C-4-4	28	Pipeline	39.1	Broad Bipolar
C-4-5	20	Pipeline	40.5	Bipolar
C-4-6	49	Debris	41.9	Bipolar
C-5-1	126	Pipeline	28.5	Broad Negative
C-5-2	55	Pipeline	23.9	Bipolar
C-5-3	6	---	21.0	Bipolar
C-5-4	6	Debris	21.9	Bipolar
C-5-5	8	---	21.2	Bipolar
C-5-6	6	---	21.8	Bipolar
C-5-7	30	Debris	23.1	Bipolar
C-5-8	56	---	21.5	Bipolar
C-5-9	6	---	21.5	Bipolar
C-5-10	16	---	19.9	Bipolar
C-5-11	6	---	19.2	Bipolar
C-6-1	6	---	24.2	Negative
C-6-2	90	Small target to starboard	19.7	Sharp Bipolar
C-6-3	41	---	19.3	Sharp Bipolar
C-6-4	10	Debris	17.3	Bipolar
C-6-5	34	Debris	17.0	Bipolar
C-6-6	8	Debris	17.3	Bipolar
C-6-7	60	---	19.2	Positive Spike
C-6-8	21	---	19.6	Bipolar
C-6-9	27	---	20.0	Bipolar
C-6-10	16	---	20.1	Bipolar
C-6-11	22	---	20.1	Positive Spike
C-6-12	7	---	20.1	Bipolar
C-6-13	220	Linear target to starboard	19.7	Bipolar
C-6-14	20	---	19.1	Negative

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel</u> (Continued)				
C-6-15	12	Debris to port	18.9	Negative
C-6-16	10	Debris	19.0	Bipolar
C-6-17	14	Debris	18.8	Bipolar
C-6-18	12	Debris	18.4	Bipolar
C-6-19	46	Pipeline	19.6	Broad Positive
C-6-20	400	Pipeline	21.6	Broad Negative
C-6-21	14	---	17.7	Bipolar
C-6-22	8	---	17.0	Bipolar
C-6-23	9	Debris	17.0	Bipolar
C-6-24	84	---	16.8	Complex Bipolar
C-6-25	29	Debris	18.5	Sharp Bipolar
C-6-26	28	Debris	18.5	Sharp Bipolar
C-7-1	13	---	15.6	Bipolar
C-7-2	9	Debris	15.6	Bipolar
C-8-1	12	---	15.3	Bipolar
C-8-2	82	---	15.7	Sharp Bipolar
C-8-3	22	---	15.7	Bipolar
D-0-1	7	---	39.6	Broad Bipolar
D-0-2	6	---	41.0	Bipolar
D-0-3	8	---	42.4	Broad Bipolar
D-0-4	8	Debris	42.1	Broad Bipolar
D-0-5	91	Pipeline	42.6	Broad Negative
D-0-6	8	---	41.9	Broad Bipolar
D-0-7	13	---	41.3	Bipolar
D-0-8	6	---	40.3	Bipolar
D-0-9	8	---	41.0	Broad Negative
D-1-1	24	Cable	36.7	Broad Bipolar
D-1-2	56	---	35.1	Bipolar
D-1-3	22	---	36.3	Negative Spike
D-1-4	13	---	40.3	Bipolar
D-1-5	93	---	34.9	Complex Bipolar
D-1-6	12	---	37.6	Broad Negative
D-1-7	105	Pipeline	38.7	Complex Bipolar
D-1-8	44	---	38.5	Broad Positive
D-1-9	25	---	38.2	Bipolar
D-1-10	40	Debris	38.1	Sharp Bipolar
D-1-11	26	---	36.3	Bipolar
D-2-1	12	---	15.0	Broad Bipolar
D-2-2	59	---	14.8	Bipolar
D-2-3	23	Debris to port	14.7	Bipolar
D-2-4	19	Channel marker	14.6	Negative
D-2-5	12	---	13.3	Bipolar
D-2-6	31	---	13.7	Positive Spike
D-2-7	8	---	14.0	Bipolar
D-2-8	40	Debris	12.9	Positive Spike

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel (Continued)</u>				
D-2-9	22	Debris	12.8	Positive Spike
D-2-10	52	Pipeline	14.3	Complex Bipolar
D-2-11	28	---	11.9	Sharp Bipolar
D-2-12	51	---	9.2	Positive Spike
D-2-13	12	---	8.7	Sharp Bipolar
D-2-14	8	Dredge debris	8.0	Positive Spike
D-2-15	6	Dredge debris	8.1	Negative Spike
D-2-16	51	---	10.8	Positive Spike
D-2-17	25	Target to port	10.5	Negative Spike
D-2-18	48	Debris	9.2	Bipolar
D-2-19	73	Debris	6.6	Sharp Bipolar
D-2-20	56	Linear targets to starboard	7.2	Bipolar
D-2-21	48	---	7.6	Negative Spike
D-2-22	20	---	12.8	Bipolar
D-3-1	180	---	9.7	Complex Bipolar
D-3-2	22	Debris	10.9	Negative Spike
D-3-3	60	Pipeline	10.8	Bipolar
D-3-4	18	Debris	11.5	Bipolar
D-3-5	24	---	11.9	Negative Spike
D-3-6	12	---	13.0	Bipolar
D-3-7	26	---	16.0	Sharp Bipolar
D-4-1	72	Pipeline	38.1	Broad Bipolar
D-4-2	8	---	37.5	Broad Bipolar
D-4-3	10	---	37.8	Broad Bipolar
D-4-4	34	Debris to starboard	37.7	Broad Positive
D-4-5	12	---	36.9	Broad Positive
D-4-6	43	---	34.7	Sharp Bipolar
D-4-7	42	Possible cable to port	35.8	Bipolar
D-4-8	11	---	37.0	Bipolar
D-4-9	20	---	32.7	Broad Bipolar
D-4-10	12	---	32.8	Broad Positive
D-4-11	9	---	33.6	Broad Positive
D-4-12	20	Debris	33.9	Bipolar
D-4-13	22	Debris	35.4	Bipolar
D-4-14	9	---	34.4	Bipolar
D-4-15	8	---	35.8	Bipolar
D-5-1	60	Cable	11.2	Positive Spike
D-5-2	19	---	11.2	Bipolar
D-5-3	29	---	10.3	Sharp Bipolar
D-5-4	17	Debris	8.6	Sharp Bipolar
D-5-5	21	---	8.6	Sharp Bipolar
D-5-6	22	---	9.7	Sharp Bipolar
D-5-7	130	---	11.1	Bipolar
D-5-8	28	Small target to port	11.2	Bipolar
D-5-9	21	---	12.8	Bipolar

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel</u> (Continued)				
D-5-10	28	Debris	11.6	Sharp Bipolar
D-5-11	14	Debris	11.7	Bipolar
D-5-12	80	Pipeline	15.5	Bipolar
D-5-13	48	Cylindrical target to port	13.5	Sharp Bipolar
D-5-14	15	---	18.2	Bipolar
D-5-15	36	Debris	18.3	Negative Spike
D-6-1	20	---	13.0	Bipolar
D-6-2	86	---	13.0	Bipolar
D-6-3	12	---	13.0	Broad Bipolar
D-6-4	58	---	12.0	Sharp Bipolar
D-6-5	9	---	12.0	Bipolar
D-6-6	22	Linear target to port	12.0	Bipolar
D-6-7	14	Cable	12.0	Negative Spike
D-6-8	110	Pipeline	12.0	Bipolar
D-6-9	82	---	9.0	Bipolar
D-6-10	64	Debris to port	9.0	Sharp Bipolar
D-6-11	22	Debris	9.0	Bipolar
D-6-12	17	Pipe	9.0	Sharp Bipolar
D-6-13	22	---	7.1	Sharp Bipolar
D-6-14	60	Debris	6.6	Sharp Bipolar
D-6-15	46	---	5.5	Broad Negative
D-6-16	29	---	5.2	Sharp Bipolar
D-6-17	24	---	5.0	Sharp Bipolar
D-6-18	33	---	5.0	Broad Bipolar
D-6-19	25	---	5.0	Broad Bipolar
D-6-20	58	---	5.0	Bipolar
D-6-21	78	Cable	7.5	Complex Bipolar
D-6-22	45	---	7.5	Bipolar
D-6-23	111	---	7.5	Sharp Bipolar
D-6-24	340	Debris	7.5	Complex Bipolar
D-6-25	61	Cable	7.5	Sharp Bipolar
D-7-1	27	---	17.5	Positive Spike
D-7-2	82	---	15.0	Complex Bipolar
D-7-3	28	---	17.2	Broad Positive
D-8-1	180	Dual linear target to port	18.0	Bipolar
D-8-2	15	---	17.0	Broad Negative
D-8-3	36	Debris	16.0	Broad Negative
E-0-1	12	---	39.2	Broad Bipolar
E-0-2	42	Unidentified target to port	37.2	Bipolar
E-0-3	6	---	37.3	Broad Bipolar
E-0-4	150	Pipeline	38.5	Broad Positive
E-0-5	9	Debris	40.6	Bipolar
E-0-6	34	---	41.3	Bipolar
E-1-1	8	---	27.4	Bipolar
E-1-2	8	---	24.8	Bipolar

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel (Continued)</u>				
E-1-3	8	Debris	22.8	Bipolar
E-1-4	15	---	24.7	Bipolar
E-1-5	9	---	33.8	Bipolar
E-1-6	9	---	32.5	Bipolar
E-1-7	12	Small target to port	25.3	Bipolar
E-1-8	65	Debris	32.1	Bipolar
E-1-9	9	---	26.3	Bipolar
E-1-10	100	Pipeline	21.4	Bipolar
E-1-11	9	---	24.1	Bipolar
E-1-12	18	Debris	23.2	Bipolar
E-1-13	20	---	20.4	Bipolar
E-1-14	23	Debris	21.4	Bipolar
E-2-1	10	Buoy	38.2	Bipolar
E-2-2	95	---	14.5	Positive Spike
E-2-3	65	---	19.9	Positive Spike
E-2-4	70	---	12.6	Bipolar
E-2-5	90	Debris	13.2	Bipolar
E-2-6	77	---	12.4	Sharp Bipolar
E-2-7	90	Debris	12.2	Sharp Bipolar
E-2-8	7	---	10.8	Bipolar
E-2-9	13	---	10.3	Bipolar
E-2-10	9	---	10.0	Bipolar
E-2-11	52	Small target to port	9.9	Bipolar
E-2-12	34	Debris	9.9	Sharp Bipolar
E-2-13	77	---	10.1	Sharp Bipolar
E-2-14	11	---	10.3	Bipolar
E-2-15	85	Pipeline	10.2	Bipolar
E-2-16	20	---	9.1	Negative Spike
E-2-17	19	---	9.3	Sharp Bipolar
E-2-18	32	---	8.9	Positive Spike
E-2-19	26	---	8.8	Positive Spike
E-2-20	25	---	8.5	Bipolar
E-2-21	10	---	7.0	Bipolar
E-3-1	35	---	12.2	Sharp Bipolar
E-3-2	24	---	12.2	Broad Negative
E-3-3	55	---	11.9	Positive Spike
E-3-4	15	---	9.6	Sharp Bipolar
E-3-5	400	Pipeline	8.7	Complex Bipolar
E-3-6	72	---	6.9	Positive Spike
E-4-1	8	---	36.2	Bipolar
E-4-2	7	---	36.0	Bipolar
E-4-3	9	---	32.1	Bipolar
E-4-4	58	Pipeline	30.4	Broad Bipolar
E-4-5	10	Debris	28.4	Bipolar
E-4-6	12	Debris	27.8	Negative

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
Pascagoula Channel (Continued)				
E-4-7	28	---	26.0	Bipolar
E-4-8	23	Debris	27.6	Broad Bipolar
E-4-9	8	---	23.7	Negative
E-4-10	16	---	28.8	Bipolar
E-5-1	12	---	12.6	Bipolar
E-5-2	52	---	10.8	Broad Bipolar
E-5-3	10	---	10.3	Bipolar
E-5-4	92	---	9.7	Negative Spike
E-5-5	14	---	8.4	Negative Spike
E-5-6	71	Pipeline	9.6	Bipolar
E-5-7	86	---	7.9	Sharp Bipolar
E-5-8	85	Cable	4.7	Sharp Bipolar
E-6-1	24	---	13.0	Positive Spike
E-6-2	16	Linear target to port	11.5	Bipolar
E-6-3	F/S	---	10.9	Positive Spike
E-6-4	35	---	10.5	Sharp Bipolar
E-6-5	15	Small target to port	10.2	Negative
E-6-6	64	---	9.5	Sharp Bipolar
E-6-7	86	---	9.0	Sharp Bipolar
E-6-8	35	---	8.2	Broad Positive
E-6-9	20	---	7.6	Broad Negative
E-6-10	57	---	7.8	Sharp Bipolar
E-6-11	137	Pipeline	8.6	Complex Bipolar
E-6-12	62	---	8.0	Sharp Bipolar
F-0-1	16	---	43.4	Bipolar
F-0-2	9	Debris	42.0	Positive Spike
F-0-3	4	---	50.6	Bipolar
F-1-1	36	Pier	41.8	Broad Bipolar
F-1-2	25	Debris	41.9	Bipolar
F-2-1	44	---	15.6	Sharp Bipolar
F-2-2	13	---	18.2	Bipolar
F-2-3	59	Buoy	19.7	Sharp Bipolar
F-2-4	72	Debris	20.1	Sharp Bipolar
F-2-5	38	Debris	26.6	Sharp Bipolar
F-2-6	34	---	30.7	Bipolar
F-2-7	25	Pier	29.3	Bipolar
F-2-8	17	Debris	29.4	Bipolar
G-0-1	7	Cable	31.0	Bipolar
G-0-2	9	Pier	22.0	Bipolar
G-0-3	7	Pier	24.0	Bipolar
G-0-4	18	Cable	24.0	Bipolar
G-0-5	5	Pier	8.0	Bipolar
G-1-1	27	Debris	25.0	Broad Bipolar
G-1-2	5	Pier	22.0	Bipolar
G-1-3	8	Pier	24.0	Bipolar

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Pascagoula Channel (Continued)</u>				
G-1-4	110	Cable	24.0	Positive Spike
G-1-5	33	Cable	24.0	Bipolar
G-1-6	44	Cable	20.0	Bipolar
G-1-7	17	Pier	20.0	Bipolar
G-1-8	14	Pier	20.0	Bipolar
G-2-1	30	Pier	8.0	Broad Bipolar
G-2-2	6	Pier	8.0	Bipolar
G-2-3	34	Pier	22.0	Sharp Bipolar
<u>Disposal Areas (n=133)</u>				
DSA-1-1	8	---	13.4	Negative
DSA-2-1	7	---	14.0	Bipolar
DSA-2-2	12	Debris to starboard	14.0	Bipolar
DSA-3-1	8	---	14.6	Bipolar
DSA-3-2	7	---	15.4	Negative Spike
DSA-3-3	6	---	13.7	Sharp Bipolar
DSA-4-1	10	---	13.0	Positive Spike
DSA-4-2	71	---	13.6	Positive Spike
DSA-5-1	10	---	16.1	Positive Spike
DSA-5-2	13	---	16.2	Positive Spike
DSA-5-3	19	---	16.2	Positive Spike
DSA-5-4	66	---	13.4	Negative Spike
DSA-5-5	7	---	13.0	Bipolar
DSA-6-1	F/S	Possible cable to starboard	14.2	Complex Bipolar
DSA-6-2	16	---	14.2	Bipolar
DSA-6-3	6	---	15.9	Negative Spike
DSA-6-4	23	---	17.1	Broad Positive
DSA-7-1	17	---	16.4	Sharp Bipolar
DSA-7-2	11	---	15.0	Sharp Bipolar
DSA-7-3	8	---	14.5	Broad Bipolar
DSA-7-4	7	---	13.7	Bipolar
DSA-8-1	118	Debris to port	14.9	Positive Spike
DSA-8-2	16	---	16.4	Bipolar
DSA-8-3	12	---	16.4	Negative Spike
DSA-8-4	12	---	17.2	Bipolar
DSA-8-5	13	---	16.7	Bipolar
DSA-9-1	5	---	15.6	Bipolar
DSA-10-1	7	---	15.8	Bipolar
DSA-10-2	89	---	16.1	Positive Spike
DSA-10-3	11	---	16.4	Bipolar
DSA-10-4	83	---	16.8	Bipolar
DSA-10-5	11	---	17.7	Bipolar
DSB-1-1	8	---	20.6	Bipolar
DSB-1-2	65	---	19.9	Bipolar
DSB-1-3	255	Possible cable to port	20.1	Negative Spike

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Disposal Areas (Continued)</u>				
DSB-2-1	7	---	20.6	Bipolar
DSB-3-1	151	---	20.8	Complex Bipolar
DSB-4-1	7	---	21.1	Bipolar
DSB-4-2	8	---	21.6	Bipolar
DSB-5-1	8	Debris	20.9	Bipolar
DSB-6-1	F/S	Linear target to port	19.9	Complex Bipolar
DSB-7-1	30	---	18.4	Bipolar
DSC-1-1	14	Debris to port	17.4	Bipolar
DSC-1-2	38	---	18.5	Sharp Bipolar
DSC-1-3	22	Debris	18.9	Bipolar
DSC-1-4	16	Probable pipe to starboard	18.7	Bipolar
DSC-1-5	27	---	18.7	Positive Spike
DSC-2-1	15	---	18.2	Bipolar
DSC-2-2	10	---	17.2	Bipolar
DSC-3-1	10	---	15.8	Positive Spike
DSC-3-2	13	Linear target to port	18.4	Negative Spike
DSC-4-1	28	---	17.5	Bipolar
DSC-4-2	9	---	17.8	Bipolar
DSC-4-3	21	---	13.3	Negative Spike
DSC-5-1	F/S	---	16.7	Negative Spike
DSC-6-1	92	---	15.5	Sharp Bipolar
DSC-7-1	13	---	15.2	Sharp Bipolar
DSC-7-2	8	---	16.3	Bipolar
DSC-7-3	7	---	17.2	Bipolar
DSD-1-1	60	Pipeline	23.5	Broad Positive
DSD-1-2	500	Pipeline	24.5	Broad Negative
DSD-1-3	10	---	23.1	Broad Bipolar
DSD-2-1	12	---	22.0	Bipolar
DSD-2-2	470	Pipeline	22.0	Broad Negative
DSD-2-3	80	Pipeline	20.9	Bipolar
DSD-3-1	100	Pipeline	27.6	Broad Positive
DSD-3-2	490	Pipeline	26.0	Complex Bipolar
DSD-4-1	23	---	29.7	Bipolar
DSD-4-2	235	Pipeline	29.6	Broad Negative
DSD-4-3	30	Pipeline	28.7	Bipolar
DSD-5-1	142	Pipeline	30.7	Positive Spike
DSD-5-2	870	Pipeline	30.8	Complex Bipolar
DSD-5-3	12	Debris to starboard	31.5	Broad Bipolar
DSD-6-1	8	---	32.5	Broad Bipolar
DSD-6-2	510	Pipeline	32.2	Bipolar
DSD-6-3	22	Pipeline	32.1	Bipolar
DSE-1-1	40	---	5.0	Positive Spike
DSE-1-2	14	---	5.0	Positive Spike
DSE-1-3	42	---	4.0	Sharp Bipolar
DSE-1-4	22	---	4.0	Positive Spike

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Disposal Areas (Continued)</u>				
DSE-1-5	50	---	4.1	Negative Spike
DSE-1-6	42	---	4.0	Sharp Bipolar
DSE-1-7	80	Pipeline	5.2	Sharp Bipolar
DSE-1-8	22	Pipeline	5.1	Negative Spike
DSE-1-9	26	Pipeline	5.0	Negative Spike
DSE-1-10	50	---	5.2	Negative Spike
DSE-1-11	48	---	5.1	Positive Spike
DSE-1-12	44	---	5.1	Sharp Bipolar
DSE-1-13	36	---	5.3	Positive Spike
DSE-1-14	96	---	4.2	Negative Spike
DSE-1-15	10	---	5.0	Negative Spike
DSE-1-16	92	---	5.0	Sharp Bipolar
DSE-1-17	46	---	5.3	Sharp Bipolar
DSE-1-18	30	---	5.4	Sharp Bipolar
DSE-1-19	20	---	5.4	Negative Spike
DSE-1-20	82	---	5.3	Sharp Bipolar
DSE-1-21	14	---	5.2	Positive Spike
DSE-2-1	74	---	1.0	Sharp Bipolar
DSE-2-2	84	---	1.1	Sharp Bipolar
DSE-2-3	58	---	1.1	Sharp Bipolar
DSE-2-4	86	---	1.0	Sharp Bipolar
DSE-3-1	24	---	1.0	Sharp Bipolar
DSE-3-2	84	---	1.1	Sharp Bipolar
DSE-3-3	78	---	1.1	Sharp Bipolar
DSE-4-1	88	---	1.2	Sharp Bipolar
DSE-4-2	50	---	1.3	Sharp Bipolar
DSE-4-3	58	Pipeline	1.2	Sharp Bipolar
DSE-4-4	90	---	1.2	Sharp Bipolar
DSE-4-5	54	---	1.1	Sharp Bipolar
DSE-5-1	92	---	1.0	Sharp Bipolar
DSE-5-2	94	---	1.0	Sharp Bipolar
DSE-5-3	32	Pipeline	1.0	Sharp Bipolar
DSF-1-1	30	---	3.0	Broad Negative
DSF-1-2	84	---	3.0	Sharp Bipolar
DSF-1-3	32	---	3.1	Broad Positive
DSF-2-1	35	---	6.2	Sharp Bipolar
DSF-2-2	14	---	6.3	Bipolar
DSF-2-3	22	---	6.3	Bipolar
DSF-2-4	52	---	6.0	Sharp Bipolar
DSF-2-5	58	---	6.5	Sharp Bipolar
DSF-2-6	42	---	7.0	Sharp Bipolar
DSF-3-1	86	---	2.1	Sharp Bipolar
DSF-3-2	38	---	2.4	Sharp Bipolar
DSF-3-3	22	---	2.4	Sharp Bipolar
DSF-3-4	92	---	2.3	Sharp Bipolar

Table 6. Anomalies Encountered.

Segment/ Line Number	Gamma Intensity	Side scan Target	Depth	Comment
<u>Disposal Areas (Continued)</u>				
DSF-3-5	52	---	3.0	Sharp Bipolar
DSF-3-6	22	---	2.6	Sharp Bipolar
DSF-3-7	78	---	2.6	Negative Spike
DSF-3-8	72	---	2.4	Negative Spike
DSF-3-9	24	---	2.1	Sharp Bipolar
DSG-2-1	160	---	2.1	Positive Spike
DSG-2-2	118	---	2.0	Positive Spike
DSG-5-1	73	---	2.0	Sharp Bipolar

Table 7. Category I Anomalies

Segment/ Line Number	Gamma Intensity	Segment/ Line Number	Gamma Intensity	Segment/ Line Number	Gamma Intensity
<u>Pascagoula Channel</u>		C-6-5	34	D-5-8	28
(n=162)		C-6-7	60	D-5-9	21
A-0-3	106	C-6-8	21	D-5-10	28
A-1-2	35	C-6-9	27	D-5-13	48
A-1-7	20	C-6-11	22	D-5-15	36
A-2-5	45	C-6-13	220	D-6-1	20
A-2-6	60	C-6-14	20	D-6-2	86
A-2-8	22	C-6-24	84	D-6-4	58
A-3-3	92	C-6-25	29	D-6-6	22
A-3-4	55	C-6-26	28	D-6-9	82
A-4-2	80	C-8-2	82	D-6-10	64
A-4-7	23	C-8-3	22	D-6-11	22
A-5-1	24	D-1-2	56	D-6-13	22
A-5-3	225	D-1-3	22	D-6-14	60
A-5-4	20	D-1-5	93	D-6-15	46
A-6-2	21	D-1-8	44	D-6-16	29
A-6-3	22	D-1-9	25	D-6-17	24
A-6-4	145	D-1-10	40	D-6-18	33
A-6-5	24	D-1-11	26	D-6-19	25
A-6-6	24	D-2-2	59	D-6-20	58
B-1-2	70	D-2-3	23	D-6-22	45
B-1-3	95	D-2-6	31	D-6-23	111
B-1-7	66	D-2-8	40	D-6-24	340
B-2-2	60	D-2-9	22	D-7-1	27
B-3-1	45	D-2-11	28	D-7-2	82
B-6-4	27	D-2-12	51	D-7-3	28
B-7-1	100	D-2-16	51	D-8-1	180
B-7-4	45	D-2-17	25	D-8-3	36
B-7-5	240	D-2-18	48	E-0-2	42
B-7-6	65	D-2-19	73	E-0-6	34
B-7-7	20	D-2-20	56	E-1-8	65
B-7-9	90	D-2-21	48	E-1-13	20
B-7-10	127	D-2-22	20	E-1-14	23
C-1-1	100	D-3-1	180	E-2-2	95
C-1-3	30	D-3-2	22	E-2-3	65
C-1-7	23	D-3-5	24	E-2-4	70
C-2-1	25	D-3-7	26	E-2-5	90
C-2-3	140	D-4-4	34	E-2-6	77
C-2-6	51	D-4-6	43	E-2-7	90
C-2-8	41	D-4-7	42	E-2-11	52
C-2-10	22	D-4-9	20	E-2-12	34
C-4-3	44	D-4-12	20	E-2-13	77
C-4-6	49	D-4-13	22	E-2-16	20
C-5-7	30	D-5-3	29	E-2-18	32
C-5-8	56	D-5-5	21	E-2-19	26
C-6-2	90	D-5-6	22	E-2-20	25
C-6-3	41	D-5-7	130	E-3-1	35

Table 7. Category I Anomalies

Segment/ Line Number	Gamma Intensity	Segment/ Line Number	Gamma Intensity	Segment/ Line Number	Gamma Intensity
<u>Pascagoula Channel</u>		DSC-5-1	F/S	DSF-3-7	78
(Continued)		DSC-6-1	92	DSF-3-8	72
E-3-2	24	DSD-4-1	23	DSF-3-9	24
E-3-3	55	DSE-1-1	40	DSG-2-1	160
E-3-6	72	DSE-1-3	42	DSG-2-2	118
E-4-7	28	DSE-1-4	22	DSG-5-1	73
E-4-8	23	DSE-1-5	50		
E-5-2	52	DSE-1-6	42		
E-5-4	92	DSE-1-10	50		
E-5-7	86	DSE-1-11	48		
E-6-1	24	DSE-1-12	44		
E-6-3	F/S	DSE-1-13	36		
E-6-4	35	DSE-1-14	96		
E-6-6	64	DSE-1-16	92		
E-6-7	86	DSE-1-17	46		
E-6-8	35	DSE-1-18	30		
E-6-9	20	DSE-1-19	20		
E-6-10	57	DSE-1-20	82		
E-6-12	62	DSE-2-1	74		
F-1-2	25	DSE-2-2	84		
F-2-1	44	DSE-2-3	58		
F-2-4	72	DSE-2-4	86		
F-2-5	38	DSE-3-1	24		
F-2-6	34	DSE-3-2	84		
G-1-1	27	DSE-3-3	78		
		DSE-4-1	88		
<u>Disposal Areas</u>		DSE-4-2	50		
(n=68)		DSE-4-4	90		
DSA-4-2	71	DSE-4-5	54		
DSA-5-4	66	DSE-5-1	92		
DSA-6-1	F/S	DSE-5-2	94		
DSA-6-4	23	DSF-1-1	30		
DSA-8-1	118	DSF-1-2	84		
DSA-10-2	89	DSF-1-3	32		
DSA-10-4	83	DSF-2-1	35		
DSB-1-2	65	DSF-2-3	22		
DSB-1-3	255	DSF-2-4	52		
DSB-3-1	151	DSF-2-5	58		
DSB-6-1	F/S	DSF-2-6	42		
DSB-7-1	30	DSF-3-1	86		
DSC-1-2	38	DSF-3-2	38		
DSC-1-3	22	DSF-3-3	22		
DSC-1-5	27	DSF-3-4	92		
DSC-4-1	28	DSF-3-5	52		
DSC-4-3	21	DSF-3-6	22		

Table 8. Category II Anomalies.

Segment/Line Number	Gamma Intensity
<u>Pascagoula Channel (n=35)</u>	
A-6-4	145
B-1-2	70
B-1-3	95
B-1-7	66
B-2-2	60
B-7-1	100
B-7-6	65
C-1-1	100
C-2-3	140
C-2-6	51
C-2-8	41
C-4-3	44
C-5-8	56
C-6-5	34
C-6-13	220
C-6-24	84
D-1-2	56
D-1-5	93
D-2-2	59
D-2-18	48
D-2-20	56
D-3-1	180
D-4-4	34
D-4-7	42
D-5-7	130
D-6-2	86
D-6-9	82
D-6-20	58
D-6-24	340
D-7-2	82
D-8-1	180
E-0-2	42
E-1-8	65
E-2-4	70
E-2-5	90
<u>Disposal Areas (n=7)</u>	
DSA-4-2	71
DSA-6-1	F/S
DSA-10-4	83
DSB-3-1	151
DSB-6-1	F/S
DSC-5-1	F/S
DSC-6-1	92

Table 9. Magnetic Clusters.

Number	Anomalies	Gamma Intensity	Comments
1.	A-0-1	8	Small side scan targets at A-2-1 and A-2-2.
	A-2-1	6	
	A-2-2	14	
	A-2-4	8	
2.	A-0-2	15	---
	A-1-9	10	
	A-4-2*	80	
	A-4-3	13	
	A-4-4	14	
3.	A-0-3*	106	Side scan targets at A-0-3, A-1-7, A-6-1.
	A-0-4	15	
	A-0-5	19	
	A-1-7*	20	
	A-1-8	18	
	A-2-6*	60	
	A-5-4*	20	
	A-6-1	10	
4.	A-1-3	10	Side scan targets at A-4-6 and A-4-7.
	A-4-6	16	
	A-4-7*	23	
	A-5-1*	24	
5.	B-1-1	5	Debris at B-1-1.
	B-1-2**	70	
	B-6-3	13	
	B-7-2	9	
	B-7-3	12	
	B-7-4*	45	
6.	B-7-5*	240	Probable anchor at B-2-2.
	B-1-5	13	
	B-1-6	10	
	B-2-2**	60	
	B-3-3	8	
	B-4-3	15	
	B-5-2	10	
	B-5-3	10	
7.	B-7-7*	20	Debris at C-6-5.
	C-5-10	16	
	C-5-11	6	
	C-6-5**	34	

*Category I

**Category II

Table 9. Magnetic Clusters (Continued).

Number	Anomalies	Gamma Intensity	Comments
8.	C-4-1	6	---
	C-5-9	6	
	C-6-9*	27	
	C-6-10	16	
9.	C-4-3**	44	Side scan targets at C-4-3, C-5-7.
	C-5-6	6	
	C-5-7*	30	
	C-6-12	7	
10.	C-6-24**	84	Debris at C-6-25, C-6-26, C-7-2, and D-8-3. Linear side scan target at D- 8-1.
	C-6-25*	29	
	C-6-26*	28	
	C-7-1	13	
	C-7-2	9	
	C-8-2*	82	
	D-7-2**	82	
	D-8-1**	180	
	D-8-2	15	
11.	D-0-2	6	Debris at D-2-3. Channel marker at D-2-4.
	D-1-11*	26	
	D-2-1	12	
	D-2-2**	59	
	D-2-3*	23	
	D-2-4	19	
	D-3-6	12	
12.	D-0-4	8	Debris at D-0-4, D-2-8, D-2-9, and D-3-4.
	D-1-9*	25	
	D-2-7	8	
	D-2-8*	40	
	D-2-9*	22	
	D-3-4	18	
13.	E-4-8*	23	Debris at E-4-8. Small side scan target at E-6-5.
	E-5-2*	52	
	E-6-3*	F/S	
	E-6-4*	35	
	E-6-5	15	
14.	E-0-1	12	Debris at E-1-12, E-4-6.
	E-1-12	18	
	E-2-8	7	
	E-2-9	13	

*Category I

**Category II

Table 9. Magnetic Clusters (Continued).

Number	Anomalies	Gamma Intensity	Comments
(14)	E-4-6	12	
(Cont.)	E-4-7*	28	
15.	E-0-2**	42	Side scan targets at E-0-2, E-2-11. Debris at E-2-12.
	E-1-11	9	
	E-2-10	9	
	E-2-11*	52	
	E-2-12*	34	
	E-3-4	15	
16.	D-4-4**	34	Debris at D-4-4.
	D-4-5	12	
	D-5-7*	130	
	D-6-15*	46	
	D-6-16*	29	
	D-6-17*	24	
17.	D-2-17*	25	Side scan target at D-2-17. Debris at D-5-4.
	D-4-9*	20	
	D-4-10	12	
	D-4-11	9	
	D-5-4	17	
	D-6-19*	25	
18.	D-0-9	8	D-5-1 identified as cable. Debris at D-6-24.
	D-4-14	9	
	D-5-1	60	
	D-5-2	19	
	D-6-22*	45	
	D-6-23*	111	
	D-6-24**	340	
19.	G-0-4	18	G-0-4, G-1-4, G-1 -5 identified as cable. G-1-3 iden- tified as pier.
	G-1-3	8	
	G-1-4	110	
	G-1-5	33	
20.	E-0-5	9	Debris at E-0-5. E-5-8 identified as cable.
	E-1-6	9	
	E-4-1	8	
	E-4-2	7	
	E-5-8	85	
21.	E-0-6*	34	---
	E-1-1	8	
	E-1-2	8	
	F-0-1	16	

*Category I

**Category II

CHAPTER 9

CORRELATIONS WITH SUBMERGED CULTURAL RESOURCES

Specific locations of magnetic anomalies recorded during the remote sensing survey and the positions of submerged sites such as vessels and historic structures have been plotted in an attempt to correlate both sets of data. Six such correlations are listed below for areas surveyed over the course of field investigations. Each correlation describes the submerged resource at a specific locale, associated survey data and a discussion of possible correlations.

It must be noted that the accuracy of the six site locations vary according to the historic documentation available. With locations that are more or less specific, the site delineated encompasses an average of 42 hectares. These represent only a small portion of the more than seventy sunken vessels which have been recorded in the Pascagoula Harbor area, due to the fact that correlations could only be attempted for the areas surveyed, i.e., the ship channel and seven disposal sites. The geographic distribution of the correlations listed is relatively straightforward: two immediately north of the Horn and Petit Bois Islands pass, three at the upper end of the channel leading to the Pascagoula River and one in a disposal site west of the ship channel (Figure 5). Thirty-three magnetic anomalies are considered in relation to these sites.

In terms of potential cultural significance, the correlations described offer little. Included are possible remnants of a pre-Civil War lighthouse, two pleasure craft, a barge and towboat and one unidentified vessel. All five wrecks occurred within the past twenty years; none are considered potentially significant cultural resources. This should not imply, however, that the anomalies recorded in these locations must all be excluded from further consideration, as these correlations cannot substantiate beyond doubt the source of these anomalies. The degree of accuracy in specific wreck locations, the number of potential resources without known locations and the somewhat tenuous nature of remote sensing data correlations without physical verification mean that selected anomalies must be given further consideration in the manner of those which cannot be correlated with recorded submerged sites. These anomalies are discussed below and in the recommendations section of this document.

Correlation No. 1

Horn Island Lighthouse

Description: The approximate location of the first Horn Island Lighthouse is roughly 366 m (1200 ft) west of the current ship channel. The pre-Civil War lighthouse was destroyed by 1860. There is a possibility that debris and foundation remnants may still be present west of the channel.

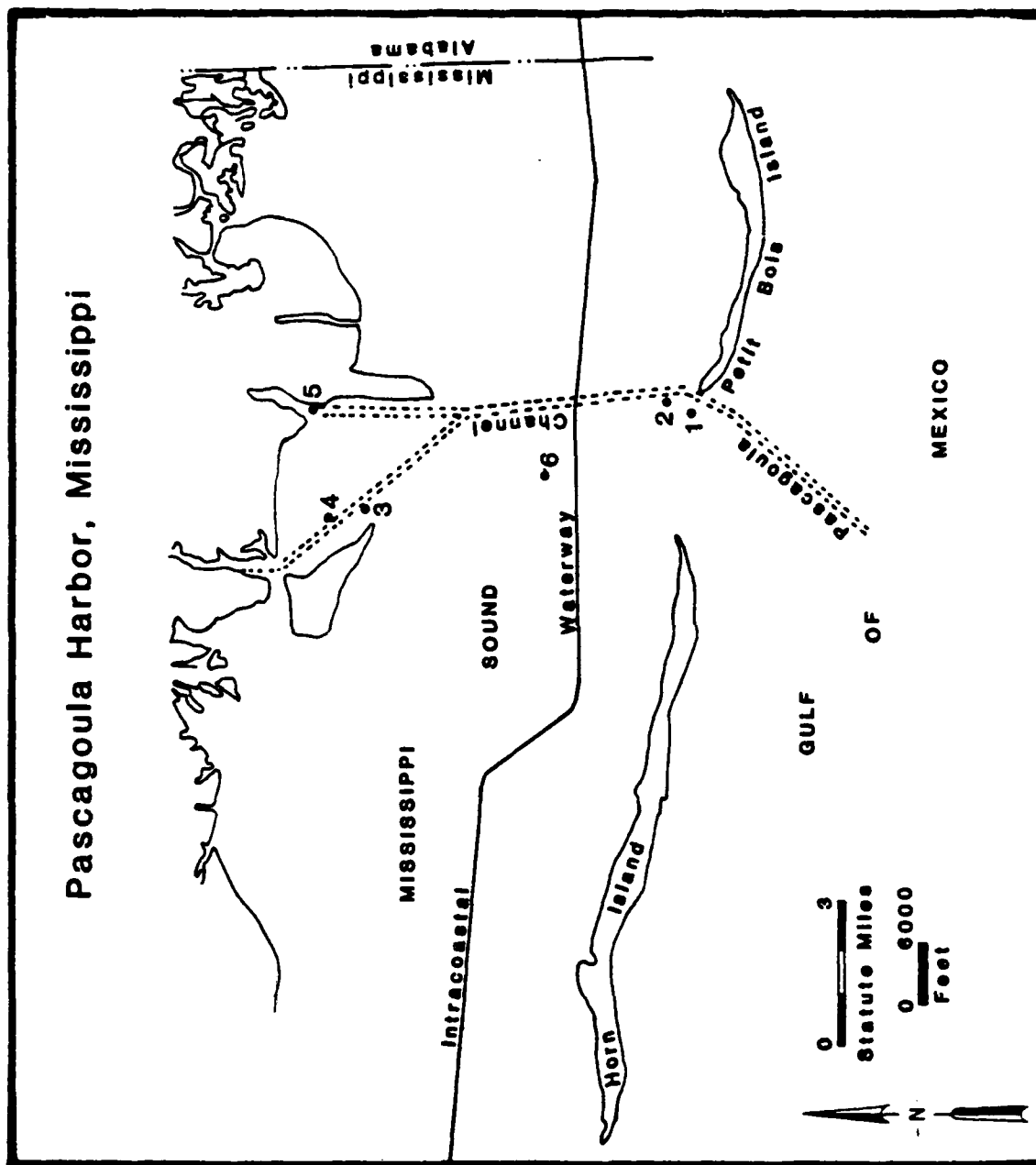


Figure 5. Submerged Resource Correlations.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	B-7-9 B-7-10	B-5-4 B-7-8 C-6-1

Discussion: Attempted correlations of remote sensing data with possible lighthouse remnants are tenuous at best. Both Category I anomalies are sharp bipolar spikes; the remaining three anomalies exhibit intensities of ten gammas or less. Fired clay contained in lighthouse remnants composed of brick could account for the magnetic signatures recorded. Side scan records indicate some scattered debris in the vicinity of anomaly B-7-8. It must be concluded that if remnants of the lighthouse are present at this locale, the remains are primarily buried beneath bottom sediments and contain little in the way of ferrous components. The degree of cultural significance which could be related to such remains is considered minimal.

Correlation No. 2

FREJABAR IV

Description: In 1972 the gas screw, wood hull yacht FREJABAR IV foundered in this approximate location. The 30 ft, 95 hp pleasure craft was built in Florida in 1940. No record of its subsequent salvage is available.

Associated Anomalies

Cluster	Category II	Category I	Other
C-7	C-6-5	None	C-5-10 C-5-11 C-6-4 C-6-6

Discussion: A Category II anomaly of 34 gammas and four additional anomalies of 6 to 16 gammas were recorded in the vicinity. C-6-5, C-5-10, and C-5-11 are within a restricted area and form Cluster 7. Side scan records indicate scattered debris in the area, but no recognizable vessel components. The recent age of the FREJABAR IV disqualifies it as potentially significant and no recommendations are advanced herein to investigate it further. The Category II anomaly C-6-5 has been deemed potentially significant, however, due to the fact that its exact source and relationship or lack of relationship to the FREJABAR IV cannot be positively stated based on reconnaissance level results.

Correlation No. 3

Unknown vessel

Description: Two vessels have been reported lost at this location. The pleasure craft MARY ANN sank here in 1981, but was salvaged shortly thereafter. The 195 ft steel barge AGS 342 was reported stranded here in 1975. No further data are available on its disposition, although it is reasonable to assume it was later removed from this locale.

Associated Anomalies

Cluster	Category II	Category I	Other
C-16	D-4-4	D-5-7	D-1-4
		D-5-8	D-4-5
		D-5-9	
		D-6-14	
		D-6-15	
		D-6-16	
		D-6-17	

Discussion: Ten anomalies were recorded in this vicinity; D-4-4, D-4-5, D-5-7, D-6-15, D-6-16, and D-6-17 are within a restricted area and form Cluster 16. Side scan records indicate scattered debris and one unidentified target in the area of D-5-8. Despite the number of anomalies in this general location, correlations with the abovenamed craft are not plausible, given the recorded salvage of the MARY ANN and the probable removal of the large AGS 342 barge. It is possible that debris from these vessels and/or their cargos remain, however, due to the recent construction of the vessels, these could not be deemed culturally significant. It is more plausible to assume that no correlation exists here between remote sensing data and recorded shipwrecks and the anomalies encountered have an unknown source.

Correlation No. 4

Unidentified pleasure craft

Description: An unidentified pleasure craft foundered at this location in 1982. Attempts by the U.S. Coast Guard to relocate the vessel were unsuccessful.

Associated Anomalies

Cluster	Category II	Category I	Other
C-17	D-3-1	D-2-16	D-0-7
		D-2-17	D-4-8
		D-4-9	D-4-10
		D-5-5	D-4-11
		D-6-19	D-5-4

Discussion: This location contains numerous magnetic anomalies which might be associated with a sunken vessel. Cluster 17, containing anomalies D-2-17, D-4-9, D-4-10, D-4-11, D-5-4, and D-6-19, presents a reasonable candidate for the vessel location. As no indication of an intact vessel is evident on side scan records, it is assumed the pleasure craft, if present, is broken up and/or buried in sediments. The vessel cannot be considered potentially significant due to recent construction.

Correlation No. 5

Towboat ALAN B.

Description: The 42 foot steel hull towboat ALAN B foundered in this location in 1967. While no records concerning its disposition could be located, it is reasonable to assume the ALAN B was removed, as this is the location of the Standard Oil dock facility.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	None	F-0-2

Discussion: A single, nine gamma anomaly was encountered in the reported location of the ALAN B foundering. This would appear to verify the assumed removal of the towboat from the dock area.

Correlation No. 6

Unknown craft

Description: This wreck location was identified through inspection of a series of navigation charts. An identified, partially submerged vessel is noted here on the 1973 chart, but is absent on the 1974 edition, indicating probable salvage of the wreck shortly after sinking.

Associated Anomalies

Cluster	Category II	Category I	Other
None	None	DSA-10-2	None

Discussion: Anomaly DSA-10-2, an 89 gamma positive spike, was the only target encountered in this portion of disposal site A. The relative lack of remote sensing data in this locale appears to corroborate the probable salvage of this vessel in the 1973-1974 period.

CHAPTER 10

CHANGES IN THE SHORELINE AND THE GENERAL GEOMORPHOLOGY OF THE PASCAGOULA AREA SINCE 15,000 YEARS BEFORE THE PRESENT

George M. Lamb

Sea Level Changes. All of the shoreline and shoreline features in the area of Pascagoula and the adjacent portion of Mississippi Sound have been formed in the past few thousand years, which is very recently, geologically speaking. These features have been formed as a result of the changes in sea level brought about by the melting of the glaciers which covered much of North America during the Pleistocene. The last of these large ice sheets began melting somewhere between 15,000 and 20,000 years before the present. As the water which had been held in these ice sheets flowed down the streams and rivers into the ocean basins, sea level rose, former stream valleys near the coast were flooded, and the shorelines in the Mississippi Sound area moved northward. The changing position of the Gulf of Mexico shoreline during Late Quaternary time has been the subject of study through the years, and most of the data presented is based on the presence of shoreline depositional features which are now submerged. Some of these data are presented by Poag (1973), who shows sea level curves used by three different authors: McFarlan (1961), Curray (1965), and Ballard and Uchupi (1970). Their conclusions are the basis for the curves in Figure 6.

A study of these curves and other data show that between 15,000 and 20,000 years B.P. sea level was considerably lower than it is today. Whether it was 77 meters lower, as indicated by the McFarlan study, or 160 meters lower, as indicated by Ballard and Uchupi, the shoreline would be far south of its present position. In addition, the stream valleys would be deeply entrenched into the previously formed Pleistocene surfaces. As sea level rose with the melting glaciers and the shoreline advanced to the north, these deep valleys would begin to fill with sediments. Otvos (1976) brings out the results of the drop, and later rise, in sea level in his discussion of the coastal geological units. He describes the Biloxi and the Prairie Formations, which were deposited during a higher stand of sea level some 90,000 to 70,000 years B.P., and points out that these were partly eroded during the subsequent withdrawal of the seas. Above these formations lie the Holocene deposits, which Otvos (1976:4) describes as follows:

After a time gap, around 9-6000 years ago, the sea has again encroached on the present Mississippi Sound area. Mud, sandy muds, muddy sands covered the Pleistocene units and sandy barrier islands emerged along the southern limits of the Sound. Especially the muddy beds are poorly consolidated and usually differ strongly from the underlying, better compacted, denser Pleistocene and older units. The thickness of these recent sediments is usually 10-35 feet.

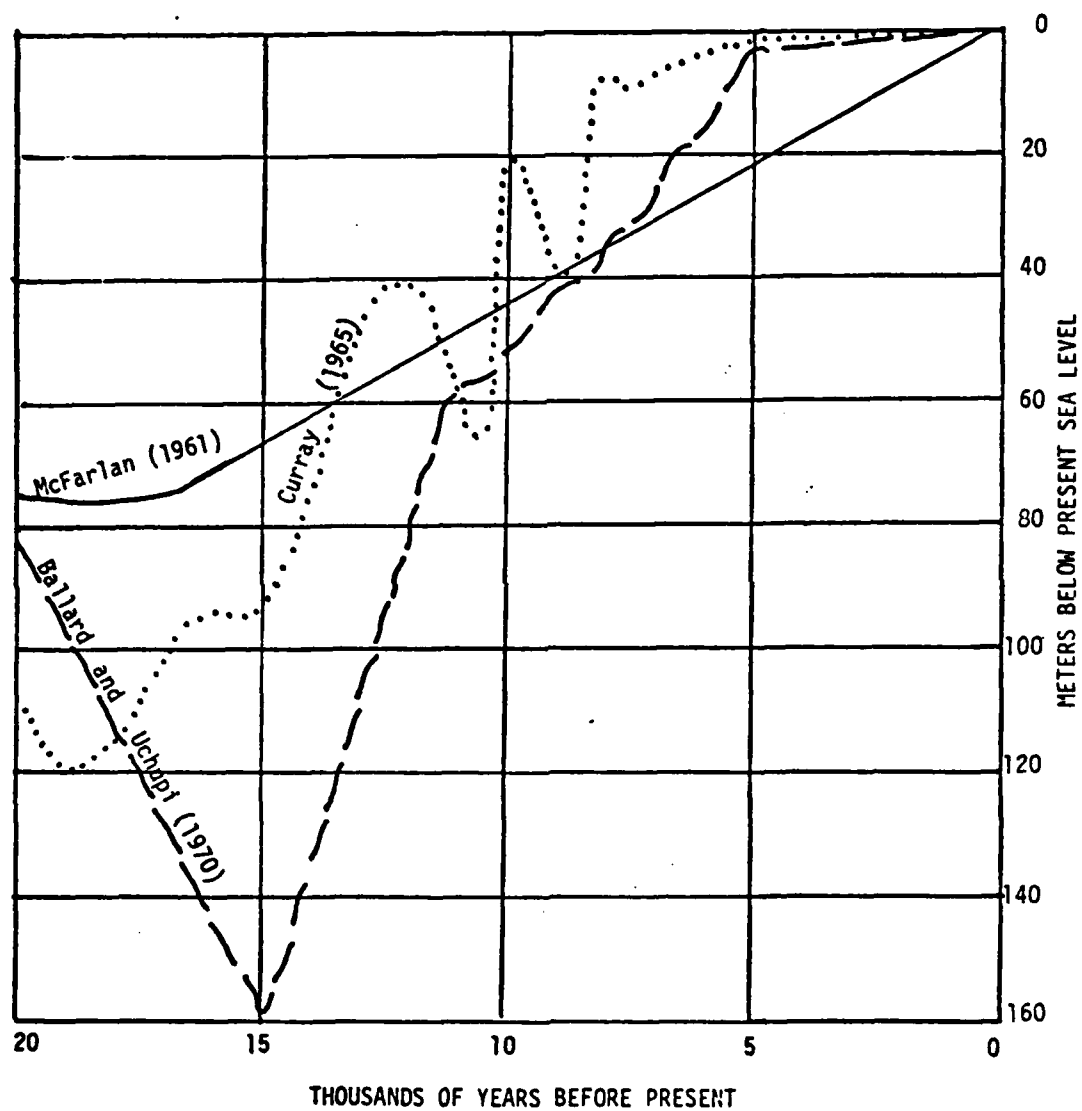


Figure 6. Late Quaternary sea level curves for the northern continental shelf of the Gulf of Mexico. (After Poag, 1973.)

The 9,000 to 6,000 years B.P. time frame that is referred to shows clearly on the lines in Figure 6. By that time sea level had risen sufficiently so as to encroach upon the area that is now Mississippi Sound and the entrenched valleys of the streams would have been largely filled by the increased sedimentation brought about by the lessening of the gradient of the streams which was the direct consequence of the rise in sea level. The Holocene sediments would be considerably thicker in these former valleys, while forming relatively thin layers through much of the Sound. There were undoubtedly stream channels within the area now occupied by the Sound, and these would, of course, be characterized by thicker Holocene sediments and could be traced with sufficient borehole or seismic data. The time gap was that period before 9,000 years B.P., during the time of lower sea level, when the subject area was being eroded so that there are no deposits representing that time. Some of the previous deposits would have been eroded during that time, so that many earlier coastal or valley settlements could have been essentially obliterated by the erosional processes.

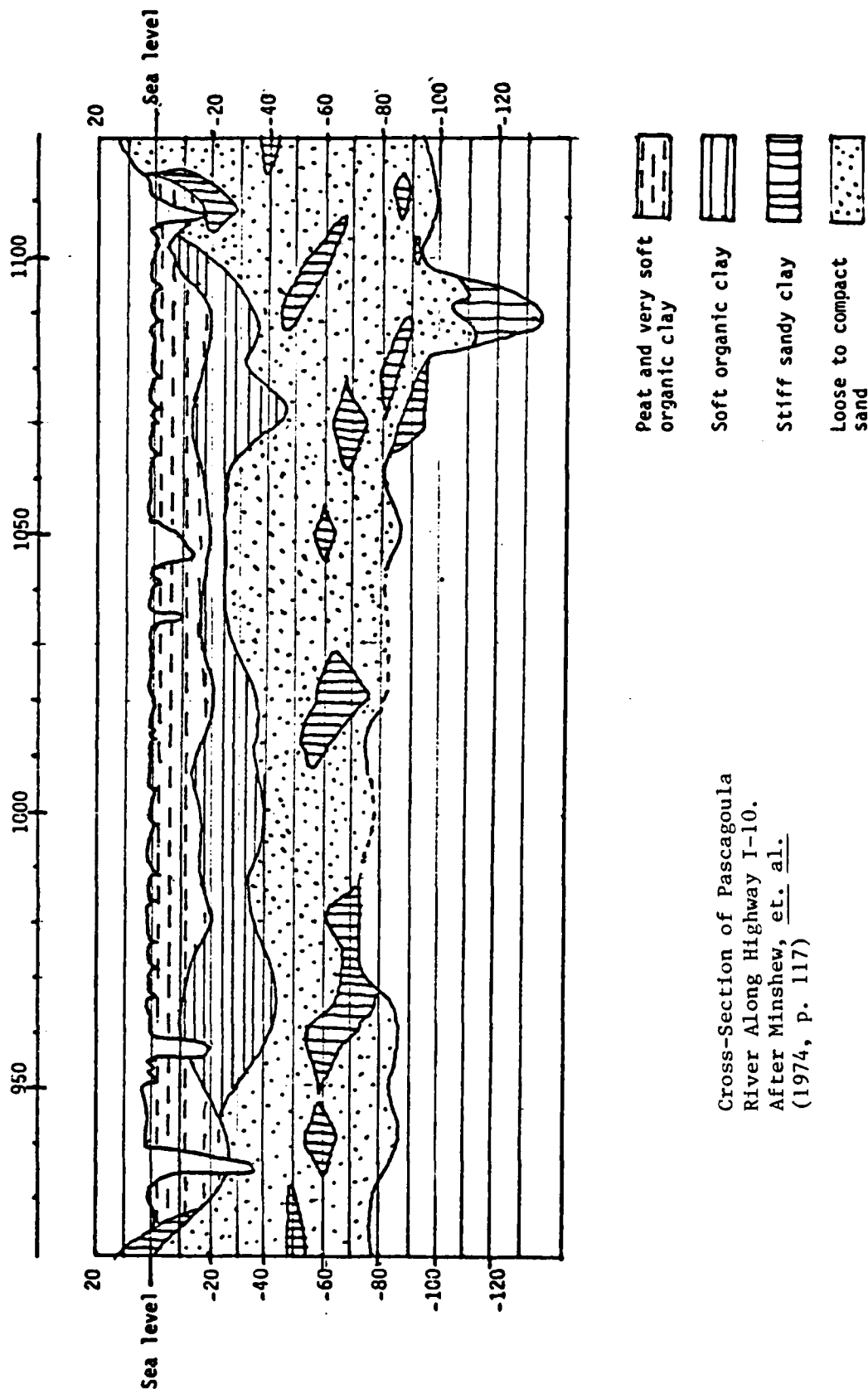
Sedimentation Rates. Figure 7 is taken from data obtained from cores along the route of Interstate Highway I-10 across the Pascagoula River delta area. In the cross-section, the soft clays in the upper forty feet and some of the sand beneath are interpreted as being Holocene sediments, filling the entrenched river valley which was cut into older Pleistocene sediments. The older Pleistocene sediments, in turn, are largely the result of filling a still older valley cut into the Miocene. There is no definite surface that can be recognized as the base of the Holocene, since the sands at the base of the Holocene are comprised of reworked Pleistocene sands and show no recognizable difference.

Otvos (1976) has similar evidence for the amount of Holocene sedimentation which he shows as a cross section, his line 2, between Bayou Casotte and the western end of Petit Bois Island. This cross section, based on four cores, shows a maximum of about forty feet of Holocene sediments, with the average through the Sound being less than ten feet. Most of the sedimentation has been in the form of valley filling and delta progradation, both in the present Pascagoula River delta complex, and in older regions of deltaic and fluvial sedimentation to the east, between Pascagoula and the Alabama line. These sediments were largely formed along an earlier course of the Escatawpa River.

Drainage Changes. The entire mainland shoreline east of Pascagoula, and into Alabama, has been built up from sediments deposited as a part of a deltaic complex formed by the former outlet of the Escatawpa River (Figure 8). Essentially all of southeastern Jackson County is made up of fluvial and deltaic sediments deposited as sea level rose and the gradient on the ancestral Escatawpa River decreased. Abandoned meandering channels can be seen throughout the entire area. Although Minshew et al. (1974: 9) expresses the idea that this delta was formed by the combined Escatawpa and Pascagoula Rivers, the separation of the two until after the formation of this delta better fits the known Pleistocene-Holocene history of this area of the Gulf Coast.

An understanding of the lack of fit of the sea level curves shown in Figure 6 depends upon an understanding of the history of the formation of

highway core stations



Cross-Section of Pascagoula River Along Highway I-10. After Minshew, et. al. (1974, p. 117)

Figure 7.

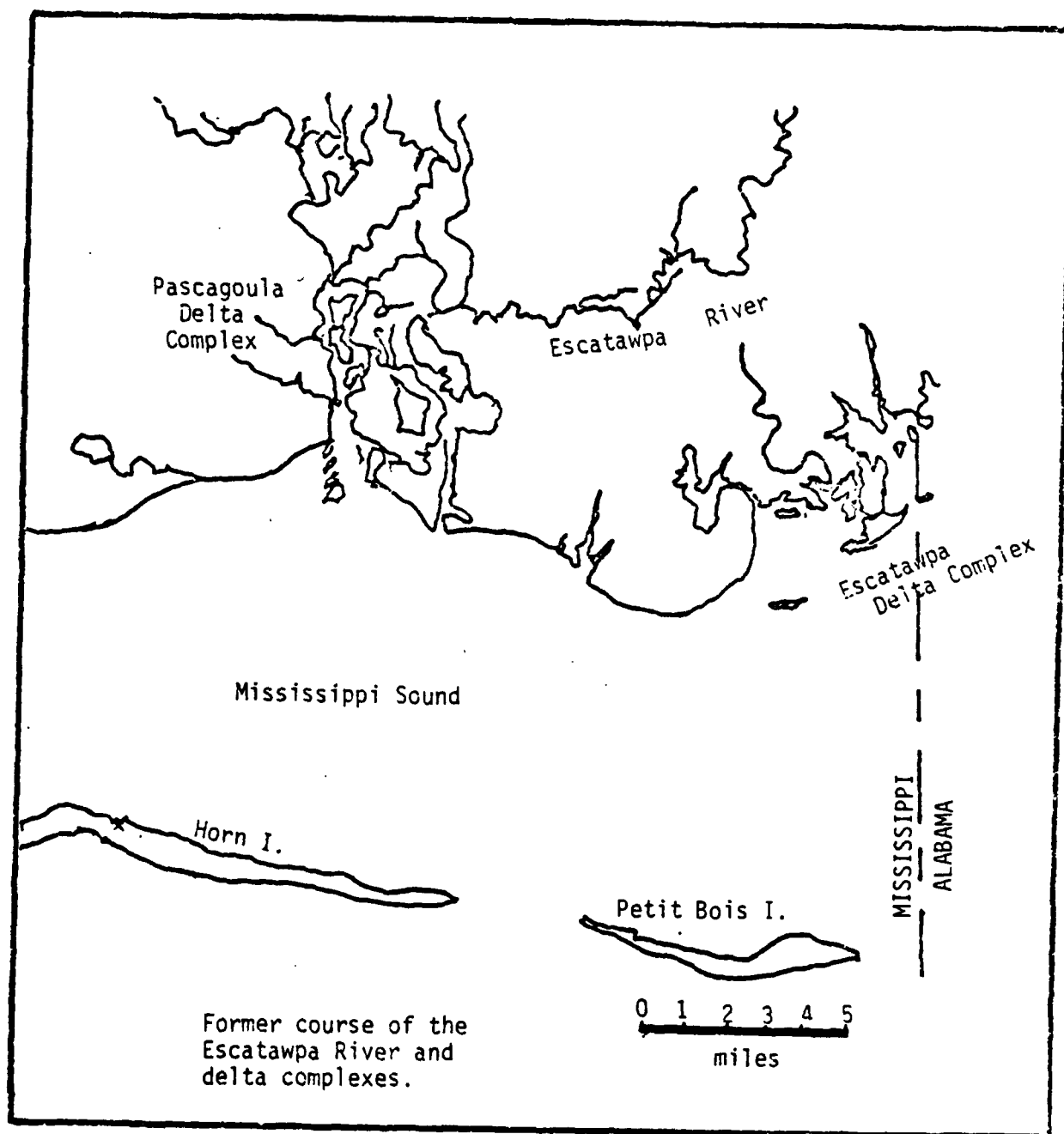


Figure 8.

the Mississippi Delta. Since the data used to generate these curves came from different areas, some of the discrepancies are due to the fact that along with the general rise in sea level, there has been subsidence in the Gulf, with the maximum amount of subsidence taking place beneath the Mississippi Delta. The vast volume of sediment being deposited at the mouth of the Mississippi River has caused that area to subside more deeply and more rapidly than any other area of the Gulf Coast. This subsidence has affected the area of this study, promoting subsidence with a slight, but definite tilting to the west toward the Mississippi Delta. As this tilting was taking place, it would favor the more rapid development of westward flowing streams, so that a tributary to the Pascagoula, flowing into that river from the east, would erode headward more rapidly, eventually cutting into and diverting the waters of the Escatawpa westward into the Pascagoula. This would not have happened until after the delta of the Escatawpa formed into Mississippi Sound and the river was essentially at its present level. It is not entirely unfounded to believe that the Pascagoula River might have migrated westward with the tilt caused by the general subsidence, but evidence of the original joining of the Pascagoula and Escatawpa, if such happened, is completely covered by the deltaic complex. In any case, whether this deltaic complex was formed by the Escatawpa alone or by the combined Escatawpa-Pascagoula, the many channels apparent in southeastern Jackson County undoubtedly played a large part in any human settlement patterns of the area.

Although there were undoubtedly some tributaries to the Pascagoula River aligned east-west beneath the area of Mississippi Sound, there is not sufficient control to locate any of the channels. The large amount of dredging, and the subsequent dumping of spoil in the area, has compounded the problem of reconstruction to some extent.

Subsidence. In addition to the general subsidence of the Gulf Coast caused by the formation of the Mississippi Delta, there has been more localized subsidence in the immediate area of Pascagoula. Some of this subsidence is attributable to the withdrawal of ground water, a problem well-documented in many areas along the Gulf Coast. Minshew et al. (1974) and Harvey et al. (1965) discuss the problem and present several cross sections of the piezometric surface, showing its rapid lowering within the last fifty years.

Undoubtedly both the general subsidence and the subsidence due to ground water withdrawal have increased in historical times. The amount of one versus the other would be impossible to ascertain, but the end result has been a subsidence of the coast that is marked by drowned forests along the shoreline and the gradual covering of man-made sites, both historic and pre-historic.

Active Erosion and Deposition. Figure 9 is presented to illustrate areas of active erosion and deposition, along with areas of significant spoil banks. Much of the shoreline is artificially stabilized by seawalls, etc., due to the fact that the area is highly industrialized and many industries are on the water.

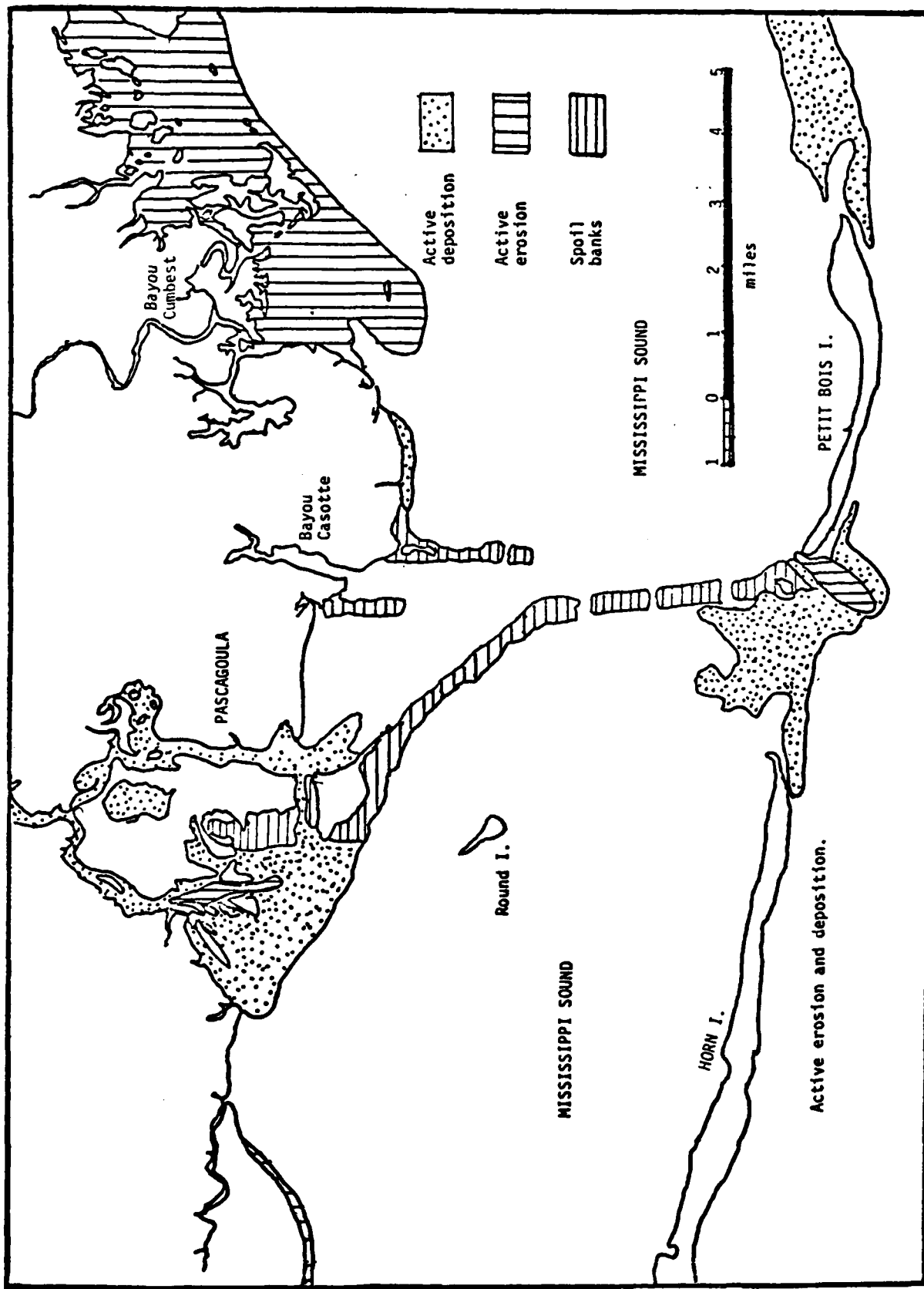


Figure 9.

The areas of most active erosion are the channels: one at the west end of Petit Bois Island and the other in the channel of the West Pascagoula River in the delta area. The area of the former delta of the Escatawpa River around Bayou Cumbest is also being eroded and modified, but at a lesser rate. There is some deposition of sand spits and shoreline in this area as the finer material is removed. The only other area of erosion is to the west of the Pascagoula River along the mainland shoreline where very slow erosion rates have been measured.

The most active areas of present deposition are in the area of the Pascagoula River Delta, where sediments are prograding into Mississippi Sound, and the area of the tidal delta building into the Sound between Horn and Petit Bois Islands. Spoil banks line the channels from the Pascagoula River and from Bayou Casotte.

There is active movement of sediment along both sides of Horn and Petit Bois Island, as well as around Round Island. Seemingly the erosion and deposition are balanced in these areas, so that there is no net change.

Summary and Conclusions. The considerable sea level rise brought on by the melting of the last glaciers of the Pleistocene formed the present shoreline of the Pascagoula area. The sedimentation accompanying this higher sea level has formed the barrier islands offshore and built up most of what is now southeastern Jackson County, Mississippi. Most of the deposition on the mainland has been in the form of fluvial-deltaic complexes formed by both the Escatawpa and Pascagoula Rivers.

The landforms which were the result of this deposition have been modified by subsidence, changing the patterns of both erosion and deposition to some degree. Very recent man-made changes have contributed significantly to the present configuration.

Implications for Submerged Sites

The geologic processes which have occurred over the past 15,000 years as described by Dr. Lamb serve to delineate two distinct epochs relative to human occupation of the Pascagoula area.

The first epoch, spanning 15,000 to 9,000 B.P., is marked by encroachment of the Mississippi Sound due to a gradual rise in sea level attributed to glacial melt. Northward shoreline migration and flooding of river and stream valleys were notable consequences of the rise in sea level. Erosional processes associated with sea encroachment within the Sound appear to have been extensive, implying that Paleo and Early Archaic occupation sites in the area were subject to extensive postdepositional disturbance. The potential for extant submerged sites of this period in the study area would appear to be of a low order.

The subsequent period, 9,000 to 6,000 B.P., is characterized by stabilization of sea level, barrier island formation and the beginning of increased sedimentation within the Sound. As noted by Lamb, Holocene sediments in the Sound presently average ten feet and approach forty feet

in the deltas. Present sea level, excluding subsidence effects, was probably attained no later than 5,000 B.P. The 9,000 to 5,000 B.P. time-frame constitutes a period of potential settlement by Middle Archaic inhabitants retreating gradually northward as the sea encroachment continued at a reduced pace from the previous epoch. Such sites have a greater potential for survival due to encapsulation and protection by increased sedimentation rates within the Sound.

By the Late Archaic, the land configurations seen today had generally stabilized, excluding the continually changing deltas of the Pascagoula and Escatawpa Rivers. Effects on sites of this era are due mainly to wave erosion and coastal subsidence, a process which has increased recently due to ground water removal.

The paucity of coring data and lack of subbottom profile data for this portion of the Mississippi Sound seriously detracts from any conclusions as to submerged site locations away from the present shoreline. The high probability areas delineated for Mobile Bay (Mistovich and Lamb 1983), based on submerged stream courses and general prehistoric settlement patterns, cannot be posited with any accuracy for the Pascagoula area. Until further data are available, it can merely be stated that a potential exists for submerged, primarily Archaic sites within the Sound and more recent, subsided sites along the current shoreline.

CHAPTER 11

RECOMMENDATIONS FOR ADDITIONAL INVESTIGATIONS

Introduction

The findings of this Phase I reconnaissance survey provide the basis for further cultural resource investigations related to the Pascagoula Harbor channel improvement project. The following chapter contains proposed recommendations for additional archaeological investigations. It is composed of several sections: recommendations for terrestrial sites encountered in the survey, magnetic anomalies recommended for Phase II testing, proposed methods for additional marine investigations, a schedule for such studies, and a series of study goals applicable to the Pascagoula region.

Recommendations for Terrestrial Sites

As a result of the terrestrial survey, two sites, 22Ja516 ("Big Greenwood Island Site") and 22Ja618 ("Little Greenwood Island Site") were relocated and evaluated. Both sites are considered to be potentially eligible to the National Register of Historic Places. Although they have been partially disturbed by pothunting, both contain areas which remain undisturbed. Preferably, the sites should not be impacted; however, if impact is unavoidable, a plan to mitigate adverse effects should be formulated and implemented.

The mitigation of these sites should be undertaken using primarily hand excavation methods. At both sites, it will be necessary to isolate those areas which have been affected by pot hunting activities. These intrusions should be carefully accounted for. In order to determine which parts of the site remain undisturbed, it is recommended that small test units be placed across the site. Once the areas determined to be undisturbed are accounted for, it is recommended that control block techniques be utilized to excavate the undisturbed deposits. These blocks should be as large as possible in order to acquire as much horizontal exposure as conditions permit. The block technique will also facilitate vertical excavation by providing continuous profiles.

At both sites problems with infiltration of water will present a problem. Excavators should be fully prepared to deal with this problem; again, the block technique is considered to be very suitable in dealing with this condition.

Part of the historic component of Site 22Ja516 is a military cemetery. Normally cemeteries are not considered eligible to the National Register of Historic Places, however as it is part of a greater complex, a determination of significance remains to be made.

Two former house sites, 22JaE1 and 22JaMM1, were located and recorded during this survey. Both sites are of recent age and have undergone severe disturbance. No structural elements or associated features were found to be present. Both sites are not considered to be eligible to the National Register of Historic Places. Thus no further work is recommended.

Site 22JaA1 is the old municipal land fill and sewage treatment facility. The random disposal pattern along with its relatively recent provenience indicates that 22JaA1 is not a significant cultural resource and no further cultural resource management is considered warranted.

As a result of the terrestrial survey it is considered that the selected disposal areas bear little potential of containing significant cultural resources. The proposed areas are for the most part poorly suited to permanent human habitation in the absence of major land modification. It is expected that if a 100 percent survey of the proposed areas should be conducted, a small number of historic former house sites are likely to be discovered. It is not expected that significant numbers of aboriginal sites would be located. It is generally believed that aboriginal use of these areas was normally limited to transient hunting and gathering activities, which leave little if any archaeological remains.

The available aboriginal settlement data for this area indicate that identifiable sites are mainly located along the coast proper and along major permanent streams on well drained soils.

Anomalies Recommended for Phase II Testing

The following lists of individual anomalies and magnetic clusters are those considered worthy of identification and evaluation under a Phase II Testing program. A few have been discussed in the previous section relating to potential correlations with submerged resources. The remainder represent large and/or complex anomalies and clusters which are considered to best represent potentially significant resources. While many of the vessels listed in the shipwreck inventory are of modern origin or have reasonably accurate known wreck locations, at least two dozen vessels which are potentially eligible under criteria of age and vessel class have imprecisely documented wreck locations. In effect, these submerged resources are likely to be located anywhere within the study area defined in this investigation. This section includes all recommended anomalies within the channel and disposal site areas which are considered to exhibit the highest potential for representing heretofore unknown wreck locations.

Inventory

Pascagoula Channel

Anomaly Clusters (n=7)

<u>Number</u>	<u>Segment</u>
3	A
5	B
6	B
10	C/D
11	D
15	E
18	D

Individual Category II Anomalies (n=6)
(Not contained in clusters above)

Number
A-6-4
B-7-1
C-1-1
C-2-3
C-6-13
D-5-7

Disposal Sites
Individual Category II Anomalies (n=4)

Number
DSA-6-1
DSB-3-1
DSB-6-1
DSC-5-1

Summary

In the Pascagoula channel portion of the project area, seven clusters (containing a total of 53 anomalies) and six individual anomalies are recommended for further study. These are distributed relatively evenly along the channel, although some concentration occurs in the area of the Horn Island/Petit Bois Island pass and the channel divergence (Pascagoula/Bayou Casotte) to the north. Four individual anomalies have been recommended in the disposal sites, distributed within three of the four deep disposal areas. A total of ten anomalies and seven clusters are recommended for the channel and disposal areas combined.

Recommendations for Phase II Marine Investigations

The Phase I reconnaissance survey described in this report has provided a substantial cultural resource data base for Pascagoula Harbor in terms of historical documentation and site distribution. The anomalies listed previously in this chapter as potentially significant should be investigated further if they are determined to be in danger of adverse impact. These investigations would be conducted within a Phase II program of identification and evaluation which should include the following procedures:

Relocation. The x-y coordinates provided for each anomaly under the Phase I survey serve as the primary datum for relocation. This procedure not only "rediscovers" the site, but also ascertains whether the anomaly has remained in a stable position or has been impacted by vessel traffic, trawling, or hydraulic forces. Magnetometer and accurate positioning are the minimum systems required for relocation.

Contouring. Following relocation, sufficient magnetic data on the anomaly should be collected to produce a contour map of the site. This may be accomplished by a close grid pattern resurvey of the anomaly with magnetometer and positioning. Optimally, the grid would be composed of a centerline run followed by two offset runs on either side of centerline, based on a 5 m (16.4 ft) lane spacing. The same pattern should then be performed at a 90 degree axis to the initial runs. Under this approach, a single anomaly is inspected via ten survey lines spaced five meters apart within a twenty by twenty meter block, providing sufficient magnetic data to produce a magnetic contour map. The contour map serves to delineate the site horizontally, to determine its characteristics, including individual target locations, and to more accurately determine its position. The diving team will have in hand a precise magnetic contour map of the site prior to any diving activities. A specific target or a number of targets within a cluster may then be determined and buoyed prior to diver investigation.

Bottom Search. Based on the contour map, an initial investigation point can be selected that is in close proximity to either the point source of the anomaly or one of the large distortions in an anomaly cluster. The investigation point should be buoyed and concentric search patterns by divers initiated. By visually inspecting the bottom for ferrous debris, the divers can ascertain to what degree the anomaly source is exposed above sediments. Hand held magnetometers carried by the divers can provide corroborative data on the exact position and extent of the anomaly. In some cases, it may be ascertained that the anomaly is fully exposed, thus vastly facilitating identification and evaluation. For those anomalies which are found to be buried within bottom sediments, subsurface testing procedures are necessary.

Subsurface Testing. Objects which settle on a bay bottom are subject to a number of factors which result in their being covered by sediment. Many will descend through less dense sediments to a resistant stratum due to mass alone. Sediment discharge from river systems entering a harbor and spoil material resulting from maintenance dredging of ship channels are major sources of overburden on immersed sites. It can be presupposed in most near-shore, harbor environments along the northern Gulf Coast that a majority of anomalies discovered will be buried to some degree below bottom sediments.

A number of subsurface testing techniques are available for excavation of buried anomalies. As an initial procedure, jet probing has proven extremely efficient in locating solid objects buried in sediment, and in determining areal extent of dispersed material, amount of overburden and material nature of an object (wood vs. metal). This can be followed by test trench excavation using a variety of devices such as dredges, air-lifts or blower units. Each device must be chosen in light of environ-

mental variables at a particular site, as each operates most efficiently under distinct conditions of sediment composition and water depth. Primary consideration in the use of any system must be careful, efficient placement of test trenches so as to avoid unnecessary impact to the site. Test trench locations should be predicated on detailed evaluation of all data garnered from preceding stages of investigation. Above all, impact to a site should be the minimum necessary to identify and evaluate the anomaly source.

Projected Phase II Schedule

The following table presents estimates of the time required to conduct identification and evaluation procedures on the potentially significant anomalies.

Phase II investigation of an anomaly is estimated to require three days, including anomaly relocation, map production and interpretation of magnetic contours, bottom search and subsurface testing. The three day total represents a single work unit.

Clusters, because of their areally concentrated nature, can be more efficiently investigated than a number of widely dispersed anomalies. Time estimates for clusters are based on 1.5 days of investigation for each anomaly within the cluster.

Table 10. Schedule for Phase II Testing.

Anomaly No.	I. Single Anomalies		II. Clusters	
	Work Units	Cluster No.	Work Units	
A-6-4	1.0	3	4.0	
B-7-1	1.0	5	3.5	
C-1-1	1.0	6	4.0	
C-2-3	1.0	10	5.0	
C-6-13	1.0	11	3.5	
D-5-7	1.0	15	3.0	
DSA-6-1	1.0	18	3.5	
DSB-3-1	1.0			
DSB-6-1	1.0			
DSC-5-1	1.0			
TOTALS	10.0		26.5	

Total Estimate: 36.5 units x 3 days per unit = 109.5 days.

Study Goals

The following list of study goals suggests research topics which have the potential to add significantly to our knowledge of the culture history of the Pascagoula region.

The Pascagoula region represents the eastern frontier of the Poverty Point culture. Site 22Ja516 investigated by this survey contains evidence of a Poverty Point component, but lacking stratigraphic integrity. Previous, unpublished investigations at the site, however, report Poverty Point stratigraphically below the Gulf Formational component in a portion of the site. Further studies at site 22Ja516 should endeavor to effectively establish integrity of the Poverty Point component.

Both sites 22Ja516 and 22Ja537 contain ceramics of the markedly similar Bayou La Batre and Tchefuncte series of the Gulf Formational stage. An important research goal in this area of the Mississippi Sound is establishment of the relationship of Bayou La Batre to Tchefuncte, along with the Alexander and St. Johns-like series occurring at this period.

Human skeletal remains indicating the presence of a prehistoric cemetery at site 22Ja516 were recovered by this survey and by previous investigations at the site. Further study at the site should include a program to establish the presence and extent of the cemetery.

Further data are needed for delineation of potential submerged prehistoric site locations. While the general geologic effects of subsidence, eustatic sea level changes and sedimentation are understood for the area, subbottom profiler and core data are necessary for the delineation of specific high probability locales. With such information available, predicted settlement patterns may be compared with similar data available from Mobile and Tampa Bays and a program of survey and testing of potential submerged sites initiated.

What remains of Camp Twiggs have escaped adverse impact? What gaps in the historical record of the camp would be filled by potential remains? How many of the military graves such as those recently discovered remain?

How do marine activity patterns in Pascagoula Harbor compare to those of nearby Mobile Bay? Are transitions in primary economic emphasis, e.g. early agriculture and pastoral pursuits to later timber and fishing economies, evident in the submerged resource inventory? What are the effects of later activities, such as dredging and the presence of a major military shipbuilding facility, on this activity pattern?

Are changes in local and exotic cargoes through time comparable to those at Biloxi and Mobile Bays or are specific goods characteristic to Pascagoula?

Is the transfer of goods from vessels to inland areas representative of that occurring in similar north Gulf Coast ports? What specific changes did the advent of alternate transport systems such as railroads have on the local shipbuilding traditions?

REFERENCES CITED

- American Bureau of Shipping (American Lloyds)
1867- Record of American and Foreign Shipping. New York.
1980
- Arnold, J. Barto, III
1974 A Magnetometer Survey of the Nineteenth Century Steamboat Black Cloud. Bulletin of Texas Archaeological Society 45:225-230.
- Ballard, Robert C., and Elazar Uchupi
1970 Morphology and Quaternary History of the Continental Shelf of the Gulf Coast of the United States. Bulletin of Marine Science 20:547-559.
- Berman, Bruch D.
1972 Encyclopedia of American Shipwrecks. The Mariners Press, Boston.

An extensive but selective compilation of U.S. shipwrecks. Excludes all vessels of less than 50 tons.
- Biloxi Gulfport Daily Herald
1958 Pascagoula's 75-Year-Old Krebs Boatyard. May 9, 1958.
- Borja Medina Rojas, Francisco de
1980 Jose de Ezpelata: Gobernador de la Mobila 1780-1781. Escuela de Estudios Hispanoamericanos. Sevilla.
- Brent, Robert A.
1969 Mississippi and the Mexican War. Journal of Mississippi History 31:202-214.
- Brose, Davis S., and George R. Percy
1978 Fort Walton Settlement Patterns. In: Mississippian Settlement Patterns edited by Bruce D. Smith. pp. 88-114. Academic Press, New York.
- Brown, Calvin S.
1926 Archaeology of Mississippi. University, Mississippi.
- Brown, Glenn Francis, Velora Meek Foster, Robert Wynn Adams, Edwin William Reed, and Harold Dement Padgett, Jr.
1944 Geology and Groundwater Resources of the Coastal Area in Mississippi. Mississippi State Geological Survey, Bulletin 60. University, Mississippi.
- Bryant, George H.
1972 Bayou La Batre, The Town That Is Commercial Fishing. Fish Boat Magazine, October. (Reprint).
- Burger, Nash K.
1844 A Note on Shipbuilding at Pascagoula, 1838-1944. Journal of Mississippi History 6:46-48.

- Cain, Cyril Edward
 1953 Four Centuries on the Pascagoula. Volume 1. State College, Mississippi.
- 1962 Four Centuries on the Pascagoula. Volume 2. State College, Mississippi.
- Chambers, Moreau
 1933 Indian Mounds and Sites in Mississippi. Volume I. Works Progress Administration.
- Cirlot, F.W.
 1983 Personal Interview, Moss Point, Mississippi. June 29, 1983.
- Clark, Ebenezer
 1838- Ship Yard Log Book. Manuscript on deposit at Mississippi Department of Archives and History. Jackson, Mississippi.
- Clausen, Carl J.
 1965 A 1715 Spanish Treasure Ship. Contributions of the Florida State Museum, Social Sciences, No. 12. Gainesville.
- Coastal Environments, Inc.
 1977 Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. In four volumes. Report to National Park Service. Washington.
- Crusoe, Donald L.
 1980 A Cultural Resources Survey for a Gas Pipeline Replacement Crossing Smith Lake off the Pascagoula River, Jackson County, Mississippi. An Associate of Trilobite, Technical Report 10. Report on file at Mississippi Department of Archives and History, Jackson.
- Curray, Joseph R.
 1965 Late Quarternary History, Continental Shelves of the United States. In: H.E. Wright, Jr., and David G. Frey, eds., The Quaternary of the United States. Princeton University Press, Princeton.
- Daniels, Josephus, ed.
 1921 Official Records of the Union and Confederate Navies in the War of the Rebellion. Washington.
- Department of Commerce, Bureau of Navigation
 1924 Fifty-Sixth Annual List of Merchant Vessels of the United States. Washington, Government Printing Office.
- Dilworth, Anne L.
 1979 Aboriginal Pipes of the Northern Gulf Coast. Florida Anthropologist 32(4):139-146.

- Eleuterius, Lionel
1983 Personal Interview, Ocean Springs, Mississippi, June 21, 1983.
- Fisher, Alton K.
1979 Osteological Analysis of the Greenwood Island Skeletons. Mississippi Archaeology 14(2):5-6, 11-12.
- Ford, James A., and George I. Quimby
1945 The Tchefuncte Culture, an Early Occupation of the Lower Mississippi Valley. Memoirs of the Society for American Archaeology 2.
- Fuller, Richard S., and Noel R. Stowe
1982 A Proposed Typology for Late Shell Tempered Ceramics in the Mobile Bay-Mobile/Tensaw Delta Region. In: Archaeology in Southwest Alabama: A Collection of Papers, edited by Cailup B. Curren, Jr., pp. 45-93. Alabama-Tombigbee Regional Commission. Camden, Alabama.
- Gagliano, Sherwood M.
1963 A Survey of Preceramic Occupations in Portions of South Louisiana and South Mississippi. Louisiana State University, Coastal Studies Institute, Technical Report 16.
- Gagliano, Sherwood M., and Clarence H. Webb
1970 Archaic-Poverty Point Transition at the Pearl River Mouth. In: The Poverty Point Culture. Southeastern Archaeological Conference Bulletin 12:47-72.
- Geiger, Carey L.
1979 Greenwood Island Coffin Finds. Mississippi Archaeology 14(2): 3-4.
- Gibson, Jon L.
1973 Social Systems at Poverty Point, An Analysis of Intersite and Intrasite Variability. Ph.D. dissertation, Southern Methodist University.
- Goode, George Brown
1887II A Geographical Review of the Fisheries Industries and Fishing Communities for the Year 1880. In The Fisheries and Fishery Industries of the United States. Section II, U.S. Commission of Fish and Fisheries. Washington, Government Printing Office.

1887V History and Methods of the Fisheries, Volume I. In The Fisheries and Fishing Industries of the United States. Section V, U.S. Commission of Fish and Fisheries. Washington, Government Printing Office.
- Goode, Paul R.
1957 The United States Soldiers' Home, A History of its First Hundred Years. Privately published.

Greenwell, Dale

- 1977a Untitled Report. Survey of North Spoil Area, Ingalls Shipbuilding Division, Litton Industries, Site-3382-56-1, Pascagoula, Ms. Report on file at Mississippi Department of Archives and History, Jackson.

(No sites recorded, but much 18th-19th century ballast in area previously dredged).

- 1977b Untitled Report. Survey of Alternate Site #3 for Jackson County Airport. Report on file at Mississippi Department of Archives and History, Jackson.

- 1981a Archaeological Survey Report on Pascagoula Urban Waterfront and Moss Point Industrial (Special Management Areas). Bureau of Marine Resources. Report on file at Mississippi Department of Archives and History. Jackson.

- 1981b Untitled Report. Pascagoula-Foster Street Sewage Treatment Plant, Pascagoula, Jackson County, Mississippi. Report on file at Mississippi Department of Archives and History, Jackson.

(Test excavations in 22Ja603, City of Pascagoula).

- n.d. The Mississippi Gulf Coast: Bridging a Gap in the Record. Ms. to be published in Perspectives on Gulf Coast Prehistory, edited by Dave D. Davis. University of Florida Press. Gainesville.

Hall, Henry

- 1884 Report on the Ship-Building Industry of the United States. Department of the Interior, Census Office. Washington, Government Printing Office.

Harvey, E.J., H.G. Golden, and H.G. Jeffery

- 1965 Water Resources in the Pascagoula Area, Mississippi. U.S. Geological Survey Water Supply Paper No. 1763.

Hickman, Nollie W.

- 1957 Logging and Rafting Timber in South Mississippi, 1840-1910. Journal of Mississippi History 19:154-172.

Higginbotham, Jay

- 1967 Pascagoula, Singing River City. Gill Press. Mobile.

Hudson, Jack C.

- 1973 Field Report and Magnetometer Survey Analysis, Biloxi Bay, Mississippi. Report submitted to Mississippi Department of Archives and History. Gulf South Research Institute, Baton Rouge.

- 1981 Magnetometer Survey, Areas of Blocks 71, 72, 73, 89, 90, 91, Northwest Gulf Area, Alabama. Report to Phillips Petroleum. Cultural Resource Services, Inc. Seabrook, Texas.

Hyatt, Robert D.

- 1977 Cultural Resources Survey of Proposed Improvements to Mississippi Highway No. 611 at Pascagoula (98-0031-0100410), Jackson County. Mississippi State Highway Department. Report on file at Mississippi Department of Archives and History, Jackson.

Jenkins, Ned J.

- 1982 The Gulf Tradition and Hopewellian Ceramics. Paper presented at the Thirty-Ninth Southeastern Archaeological Conference. Memphis, Tennessee.

Kniffen, Fred B.

- 1969 Louisiana: Its Land and People. Baton Rouge. Louisiana State University Press.

Knight, Vernon James, Jr.

- 1983 Personal Correspondence, May 16, 1983.

Lazarus, William C.

- 1959a A.W. Pinola Site, Pascagoula, Mississippi. Ms. report on file, Temple Mound Museum. Fort Walton Beach, Florida.
- 1959b "Old Place," Gautier, Jackson Co., Miss. Ms. report on file, Temple Mound Museum. Fort Walton Beach, Florida.
- 1959c Old Spanish Fort Site, Pascagoula, Mississippi. Ms. report on file, Temple Mound Museum, Fort Walton Beach, Florida.
- 1959d Site "Fifteen Mile," up Pascagoula River, Mississippi. Ms. report on file, Temple Mound Museum. Fort Walton Beach, Florida.
- 1960a Supplemental Report on the A.W. Pinola Site, Pascagoula, Miss. Ms. report on file, Temple Mound Museum, Fort Walton Beach, Florida.
- 1960b Second Supplemental Report on the A.W. Pinola Site, Pascagoula, Mississippi. Ms. report on file, Temple Mound Museum, Fort Walton Beach, Florida.

Lloyds of London

- 1760- Lloyd's Register of British and Foreign Shipping. J. and H. Cox and Wyman, London.

Lytle, William M.

- 1952 Merchant Steam Vessels of the United States, 1807-1868, "The Lytle List." Edited with an introduction by Forrest R. Holdcamper. Steamship Historical Society of America, Publication 6. Mystic, Connecticut.

An exhaustive listing of data concerning U.S. merchant steam vessels of all types, 1807-1868. Compiled from official merchant marine documents and other sources.

- Lytle, William M., and Forrest R. Holdcamper (comp.)
 1975 Merchant Steam Vessels of the United States, 1790-1868, the "Lytle - Holdcamper List." The Steamship Historical Society of America, Inc. Staten Island, N.Y.
- Updating of Lytle (1952).
- Lowry, Robert, and William H. McCardle
 1978 A History of Mississippi. The Reprint Company, Publishers. Spartanburg, South Carolina.
- McFarlan, Edward, Jr.
 1961 Radiocarbon Dating of the Later Quaternary Deposits, South Louisiana. Geological Society of America Bulletin 72(1): 129-158.
- McLemore, Richard A.
 1973 A History of Mississippi. In 2 vols. University and College Press of Mississippi. Jackson.
- Marshall, Richard A.
 1982 A Report on Archaeological Test Excavations at Goode Lake, Jackson County, Mississippi. Mississippi Department of Archives and History and Jackson County Port Authority, Archaeological Report 10. Jackson, Mississippi.
- Minshew, V.H., C.A. Gazzier, L.P. Malbrough, and T.H. Waller
 1974 Environmental Geological Analysis, Jackson County, Mississippi. The Mississippi Mineral Resource Institute. The University of Mississippi.
- Mistovich, Tim S.
 1980 Magnetometer Survey of Portions of Biloxi Bay, Mississippi. Report submitted to U.S. Army Corps of Engineers, Mobile District. Cultural Resource Services, Marietta, Ga.
- Mistovich, Tim S., and Vernon J. Knight, Jr.
 1983 Cultural Resources Survey of Mobile Harbor, Alabama. Report submitted to U.S. Army Corps of Engineers, Mobile District. OSM Archaeological Consultants, Inc. Moundville, Alabama.
- Mistovich, Tim S., and George M. Lamb
 1983 Potential for Submerged Prehistoric Sites. In: Cultural Resources Survey of Mobile Harbor, Alabama. Tim S. Mistovich and Vernon J. Knight, Jr. Report submitted to U.S. Army Corps of Engineers, Mobile District. OSM Archaeological Consultants, Inc. Moundville, Alabama.
- Moore, Clarence B.
 1905 Certain Aboriginal Remains of Mobile Bay and Mississippi Sound. Journal of the Academy of Natural Sciences of Philadelphia, Second Series, Vol. XIII, Part 2. Philadelphia.

- Morris, E.P.
1927 The Fore-And Aft Rig in America. New Haven. Yale University Press.
- Moss Point-Pascagoula Chamber of Commerce
1920 Untitled economic report to the U.S. District Engineer, Mobile, Alabama. Manuscript on deposit, G.S.A. Archives, East Point, Georgia.
- Otvos, E.G., Jr.
1976 Mississippi Offshore Inventory and Geological Mapping Project, 1975/76. Mississippi Marine Resource Council, Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
- Pascagoula Democrat-Star (Newspaper)
Published at Swanton, Mississippi. On file, Pascagoula City Library: January 9, 1880-August 12, 1920.
- Peck, Ann
1971 Happybirthday to Moss Point. The Mississippi Press, June 3, 1971.
- Phillips, Phillip
1970 Archaeological Survey in the Lower Yazoo Basin, Mississippi, 1949-1955. Papers of the Peabody Museum of Archaeology and Ethnology 60. Harvard University. Cambridge, Massachusetts.
- Poag, C. Wylie
1973 Late Quaternary Sea Levels in the Gulf of Mexico. Transactions of the Gulf Coast Association of Geologic Societies, 23rd Annual Convention. Houston, Texas. pp. 394-400.
- Rowland, Dunbar
1907 Mississippi, Comprising Sketches of Counties, Towns, Events, Investigations, and Persons, Arranged in Cyclopedic Form. In 3 vols. Southern Historical Publishing Association. Atlanta.
- (ed.)
1923 Jefferson Davis, Constitutionalist, His Letters, Papers, and Speeches. Mississippi Department of Archives and History, Jackson.
- 1978 Military History of Mississippi, 1803-1893. The Reprint Company, Publishers. Spartanburg, South Carolina.
- Shomette, Donald G.
1973 Shipwrecks of the Civil War. Doric Ltd., Washington D.C.
- Solis, Carlos, and Richard Walling
1982 Archaeological Survey and Testing at Greenwood Island, Mississippi. Office of Archaeological Research. Moundville, Alabama.

Southern Fisherman

1950 The Star Fish and Oyster Co., Mobile Alabama, Celebrates Its First Half-Century of Success. No. 7/10 (July):35-36.

Swanton, John R.

1946 The Indians of the Southeastern United States. Smithsonian Institution, Bureau of American Ethnology, Bulletin 137. Washington, D.C.

S-Wixon, Thomas C.

1982 Jackson County, Mississippi, Photographs from the Past. Parsley Printing Co. Pascagoula, Mississippi.

Toops, Connie

1980 The Biloxi Schooners. Woodenboat 37:80-84.

Treasury Department, Bureau of Navigation

1889 Twenty-First Annual List of Merchant Vessels of the United States. Washington, Government Printing Office.

United States Army Corps of Engineers

1867- Report to the Chief of Engineers. Government Printing Office.
1959 Washington, D.C.

United States Army Corps of Engineers, Mobile

n.d. Wreck Reports, 1917-1939. Federal Records 84079-84082, files S1, S1/1, S1/2. GSA Archives, East Point, Georgia.

United States Bureau of Customs

1866- Merchant Vessels of the United States. Government Printing Of-
1967 fice, Washington, D.C.

United States Bureau of Marine Inspection and Navigation

1937- Navigation Casualties, 1866-1910. On the Mississippi, Red,
1938 Ovachita, Yazoo, Pearl, Alabama, Apalachicola, Coosa, Sabine, Teche, Atchafalaya, and other rivers in Louisiana, Including those of the 10th district. New Orleans. Survey of Federal Archives in Louisiana.

Note: "On January 8, 1968 the office and all records of the Mobile, Alabama District Board were destroyed by fire."

United States Coast Guard

1968- Merchant Vessels of the United States. Government Printing Of-
present fice, Washington, D.C.

Annual listing of merchant vessels continuing the U.S. Bureau of Customs Series (1866-1967).

United States Department of Agriculture, Soil Conservation Service

1964 Soil Survey: Jackson County, Mississippi. Washington.

- United States Navy Department
 1971 Civil War Naval Chronology, 1861-1865. Government Printing Office, Washington.
- Walthall, John A.
 1980 Prehistoric Indians of the Southeast: Archaeology of Alabama and the Middle South. University of Alabama Press. University.
- Webb, Clarence H.
 1982 The Poverty Point Culture. Geoscience and Man 17, second edition, revised. School of Geoscience, Louisiana State University.
- Williams, Mark
 n.d. Archaeological Excavations at "Ancient Earthwork Fortification," Hancock County, Mississippi. Unpublished Ms.
- Wilson, Eugene M.
 1983 A Typology of Vessels Known to Have Been Used in the Mobile Bay Region from the Sixteenth Century through the Twentieth Century. In: Cultural Resources Survey of Mobile Harbor, Alabama, by Tim S. Mistovich and Vernon James Knight, Jr. OSM Archaeological Consultants, Inc. Moundville, Alabama.
- Wimberly, Steven B.
 1960 Indian Pottery from Clarke County and Mobile County, Southern Alabama. Alabama Museum of Natural History, Museum Paper 36. University.
- Women of Trinity Episcopal Church
 1971 Along the Gulf. Pass Christian, Mississippi.
- Works Progress Administration
 1936- Source Material for Mississippi History, Jackson County, Vol.
 1938 XXX. Compiled by State-Wide Historical Research Project. Susie V. Powell, State Supervisor.
- Wright, Newell O.
 1980 An Archaeological Survey, Chevron U.S.A. Inc.'s Refinery, Pascagoula, Mississippi. Dames and Moore, Atlanta, Georgia.
- Wright, William C.
 1979 Buttons Suggest Burial Date of Greenwood Island Skeletons. Mississippi Archaeology 14(2):7.
- Ziglar, William Larry
 1974 Shipbuilding on the Pascagoula River. Journal of Mississippi History 36:1-15.

END

FILMED

4-84

DTIC